

Preaward Compliance Review Report for All Applicants and Recipients Requesting EPA Financial Assistance

Note: Read Instructions before completing form.

I. A. Applicant/Recipient (Name, Address, City, State, Zip Code)

Name:

Address:

City:

State: Zip Code:

B. DUNS No.

II. Is the applicant currently receiving EPA Assistance? ☒ Yes ☐ No

III. List all civil rights lawsuits and administrative complaints pending against the applicant/recipient that allege discrimination based on race, color, national origin, sex, age, or disability. (Do not include employment complaints not covered by 40 C.F.R. Parts 5 and 7.)

N/A

IV. List all civil rights lawsuits and administrative complaints decided against the applicant/recipient within the last year that allege discrimination based on race, color, national origin, sex, age, or disability and enclose a copy of all decisions. Please describe all corrective actions taken. (Do not include employment complaints not covered by 40 C.F.R. Parts 5 and 7.)

N/A

V. List all civil rights compliance reviews of the applicant/recipient conducted by any agency within the last two years and enclose a copy of the review and any decisions, orders, or agreements based on the review. Please describe any corrective action taken. (40 C.F.R. § 7.80(c)(3))

N/A

VI. Is the applicant requesting EPA assistance for new construction? If no, proceed to VII; if yes, answer (a) and/or (b) below.

☐ Yes ☒ No

a. If the grant is for new construction, will all new facilities or alterations to existing facilities be designed and constructed to be readily accessible to and usable by persons with disabilities? If yes, proceed to VII; if no, proceed to VI(b).

☐ Yes ☐ No

b. If the grant is for new construction and the new facilities or alterations to existing facilities will not be readily accessible to and usable by persons with disabilities, explain how a regulatory exception (40 C.F.R. 7.70) applies.

VII. Does the applicant/recipient provide initial and continuing notice that it does not discriminate on the basis of race, color, national origin, sex, age, or disability in its program or activities? (40 C.F.R. 5.140 and 7.95)

☒ Yes ☐ No

a. Do the methods of notice accommodate those with impaired vision or hearing?

☒ Yes ☐ No

b. Is the notice posted in a prominent place in the applicant's offices or facilities or, for education programs and activities, in appropriate periodicals and other written communications?

☒ Yes ☐ No

c. Does the notice identify a designated civil rights coordinator?

☒ Yes ☐ No

VIII. Does the applicant/recipient maintain demographic data on the race, color, national origin, sex, age, or handicap of the population it serves? (40 C.F.R. 7.85(a))

☒ Yes ☐ No

IX. Does the applicant/recipient have a policy/procedure for providing access to services for persons with limited English proficiency? (40 C.F.R. Part 7, E.O. 13166)

☒ Yes ☐ No

- X. If the applicant is an education program or activity, or has 15 or more employees, has it designated an employee to coordinate its compliance with 40 C.F.R. Parts 5 and 7? Provide the name, title, position, mailing address, e-mail address, fax number, and telephone number of the designated coordinator.**

Mitzi Fennel, Chief Operating Officer
2 Boylston St., 4th Floor, Boston, MA 02116
mfennel@hria.org
617-279-2252

- XI. If the applicant is an education program or activity, or has 15 or more employees, has it adopted grievance procedures that assure the prompt and fair resolution of complaints that allege a violation of 40 C.F.R. Parts 5 and 7? Provide a legal citation or Internet Address for, or a copy of, the procedures.**

see form included in attachments: EPA form 470-4 - HRIA Attachments EPA

For the Applicant/Recipient

I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law. I assure that I will fully comply with all applicable civil rights statutes and EPA regulations.

A. Signature of Authorized Official

Oliver P Souyavong

B. Title of Authorized Official

President/CEO

C. Date

03/24/2022

For the U.S. Environmental Protection Agency

I have reviewed the information provided by the applicant/recipient and hereby certify that the applicant/recipient has submitted all preaward compliance information required by 40 C.F.R. Parts 5 and 7; that based on the information submitted, this application satisfies the preaward provisions of 40 C.F.R. Parts 5 and 7; and that the applicant has given assurance that it will fully comply with all applicable civil rights statutes and EPA regulations.

A. *Signature of Authorized EPA Official

B. Title of Authorized Official

C. Date

*** See Instructions**

Instructions for EPA FORM 4700-4 (Rev. 06/2014)

General. Recipients of Federal financial assistance from the U.S. Environmental Protection Agency must comply with the following statutes and regulations.

Title VI of the Civil Rights Acts of 1964 provides that no person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance. The Act goes on to explain that the statute shall not be construed to authorize action with respect to any employment practice of any employer, employment agency, or labor organization (except where the primary objective of the Federal financial assistance is to provide employment). Section 13 of the 1972 Amendments to the Federal Water Pollution Control Act provides that no person in the United States shall on the ground of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under the Federal Water Pollution Control Act, as amended. Employment discrimination on the basis of sex is prohibited in all such programs or activities. Section 504 of the Rehabilitation Act of 1973 provides that no otherwise qualified individual with a disability in the United States shall solely by reason of disability be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance. Employment discrimination on the basis of disability is prohibited in all such programs or activities. The Age Discrimination Act of 1975 provides that no person on the basis of age shall be excluded from participation under any program or activity receiving Federal financial assistance. Employment discrimination is not covered. Age discrimination in employment is prohibited by the Age Discrimination in Employment Act administered by the Equal Employment Opportunity Commission. Title IX of the Education Amendments of 1972 provides that no person in the United States on the basis of sex shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance. Employment discrimination on the basis of sex is prohibited in all such education programs or activities. Note: an education program or activity is not limited to only those conducted by a formal institution. 40 C.F.R. Part 5 implements Title IX of the Education Amendments of 1972. 40 C.F.R. Part 7 implements Title VI of the Civil Rights Act of 1964, Section 13 of the 1972 Amendments to the Federal Water Pollution Control Act, and Section 504 of The Rehabilitation Act of 1973. The Executive Order 13166 (E.O. 13166) entitled; "Improving Access to Services for Persons with Limited English Proficiency" requires Federal agencies work to ensure that recipients of Federal financial assistance provide meaningful access to their LEP applicants and beneficiaries.

Items "Applicant" means any entity that files an application or unsolicited proposal or otherwise requests EPA assistance. 40 C.F.R. §§ 5.105, 7.25. "Recipient" means any entity, other than applicant, which will actually receive EPA assistance. 40 C.F.R. §§ 5.105, 7.25. "Civil rights lawsuits and administrative complaints" means any lawsuit or administrative complaint alleging discrimination on the basis of race, color, national origin, sex, age, or disability pending or decided against the applicant and/or entity which actually benefits from the grant, but excluding employment complaints not covered by 40 C.F.R. Parts 5 and 7. For example, if a city is the named applicant but the grant will actually benefit the Department of Sewage, civil rights lawsuits involving both the city and the Department of Sewage should be listed. "Civil rights compliance review" means any review assessing the applicant's and/or recipient's compliance with laws prohibiting discrimination on the basis of race, color, national origin, sex, age, or disability. Submit this form with the original and required copies of applications, requests for extensions, requests for increase of funds, etc. Updates of information are all that are required after the initial application submission. If any item is not relevant to the project for which assistance is requested, write "NA" for "Not Applicable." In the event applicant is uncertain about how to answer any questions, EPA program officials should be contacted for clarification. * Note: Signature appears in the Approval Section of the EPA Comprehensive Administrative Review For Grants/Cooperative Agreements & Continuation/Supplemental Awards form.



EPA KEY CONTACTS FORM

OMB Number: 2030-0020
Expiration Date: 06/30/2024

Authorized Representative: *Original awards and amendments will be sent to this individual for review and acceptance, unless otherwise indicated.*

Name:	Prefix: Dr.	First Name: Steven	Middle Name:
	Last Name: Ridini		Suffix: EdD
Title:	President/CEO		
Complete Address:			
Street1:	2 Boylston St., 4th Floor		
Street2:			
City:	Boston	State:	MA: Massachusetts
Zip / Postal Code:	02116	Country:	USA: UNITED STATES
Phone Number:	16174510049	Fax Number:	
E-mail Address:	sridini@hria.org		

Payee: *Individual authorized to accept payments.*

Name:	Prefix: Mr.	First Name: Thomas	Middle Name:
	Last Name: Harty		Suffix: MBA
Title:	Accounting Manager		
Complete Address:			
Street1:	2 Boylston St., 4th Floor		
Street2:			
City:	Boston	State:	MA: Massachusetts
Zip / Postal Code:	02116	Country:	USA: UNITED STATES
Phone Number:	16174510049	Fax Number:	
E-mail Address:	tharty@hria.org		

Administrative Contact: *Individual from Sponsored Programs Office to contact concerning administrative matters (i.e., indirect cost rate computation, rebudgeting requests etc).*

Name:	Prefix: Mr.	First Name: Oliver	Middle Name:
	Last Name: Souyavong		Suffix: MBA
Title:	Contracts Administrator		
Complete Address:			
Street1:	2 Boylston St., 4th Floor		
Street2:			
City:	Boston	State:	MA: Massachusetts
Zip / Postal Code:	02116	Country:	USA: UNITED STATES
Phone Number:	16174510049	Fax Number:	
E-mail Address:	osouyavong@hria.org		

EPA KEY CONTACTS FORM

Project Manager: *Individual responsible for the technical completion of the proposed work.*

Name: **Prefix:**

First Name:

Middle Name:

Last Name:

Suffix:

Title:

Complete Address:

Street1:

Street2:

City:

State:

Zip / Postal Code:

Country:

Phone Number:

Fax Number:

E-mail Address:

Other Attachment File(s)

* Mandatory Other Attachment Filename:

Add Mandatory Other Attachment

Delete Mandatory Other Attachment

View Mandatory Other Attachment

To add more "Other Attachment" attachments, please use the attachment buttons below.

Add Optional Other Attachment

Delete Optional Other Attachment

View Optional Other Attachment

Application for Federal Assistance SF-424

* 1. Type of Submission:

- ☐ Preapplication
☒ Application
☐ Changed/Corrected Application

* 2. Type of Application:

- ☒ New
☐ Continuation
☐ Revision

* If Revision, select appropriate letter(s):

* Other (Specify):

* 3. Date Received:

03/24/2022

4. Applicant Identifier:

5a. Federal Entity Identifier:

5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:

7. State Application Identifier:

8. APPLICANT INFORMATION:

* a. Legal Name: Health Resources in Action, Inc.

* b. Employer/Taxpayer Identification Number (EIN/TIN):

04-2229839

* c. Organizational DUNS:

1253339630000

d. Address:

* Street1: 2 Boylston St., 4th Floor
Street2:
* City: Boston
County/Parish: Suffolk
* State: MA: Massachusetts
Province:
* Country: USA: UNITED STATES
* Zip / Postal Code: 02116-4737

e. Organizational Unit:

Department Name:

Division Name:

f. Name and contact information of person to be contacted on matters involving this application:

Prefix: Ms. * First Name: Stacey
Middle Name:
* Last Name: Chacker
Suffix:

Title: Project Director

Organizational Affiliation:

Health Resources in Action, Inc.

* Telephone Number: 16172792236

Fax Number:

* Email: schacker@hria.org

Application for Federal Assistance SF-424

* 9. Type of Applicant 1: Select Applicant Type:

M: Nonprofit with 501C3 IRS Status (Other than Institution of Higher Education)

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

* 10. Name of Federal Agency:

Environmental Protection Agency

11. Catalog of Federal Domestic Assistance Number:

66.034

CFDA Title:

Surveys, Studies, Research, Investigations, Demonstrations, and Special Purpose Activities
Relating to the Clean Air Act

* 12. Funding Opportunity Number:

EPA-OAR-OAQPS-22-01

* Title:

Enhanced Air Quality Monitoring for Communities

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

Add Attachment

Delete Attachment

View Attachment

* 15. Descriptive Title of Applicant's Project:

Massachusetts (MA) Healthy Air Network (MHAN): Monitoring and Building Capacity for Resilient
Communities

Attach supporting documents as specified in agency instructions.

Add Attachments

Delete Attachments

View Attachments

Application for Federal Assistance SF-424**16. Congressional Districts Of:*** a. Applicant * b. Program/Project

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment

Delete Attachment

View Attachment

17. Proposed Project:* a. Start Date: * b. End Date: **18. Estimated Funding (\$):**

* a. Federal	<input type="text" value="500,000.00"/>
* b. Applicant	<input type="text" value="10,211.00"/>
* c. State	<input type="text" value="0.00"/>
* d. Local	<input type="text" value="0.00"/>
* e. Other	<input type="text" value="0.00"/>
* f. Program Income	<input type="text" value="0.00"/>
* g. TOTAL	<input type="text" value="510,211.00"/>

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

- ☐ a. This application was made available to the State under the Executive Order 12372 Process for review on .
- ☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.
- ☒ c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment

Delete Attachment

View Attachment

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: * First Name:

Middle Name:

* Last Name:

Suffix:

* Title: * Telephone Number: Fax Number: * Email: * Signature of Authorized Representative: * Date Signed:

Project Narrative File(s)

* **Mandatory Project Narrative File Filename:**

Add Mandatory Project Narrative File

Delete Mandatory Project Narrative File

View Mandatory Project Narrative File

To add more Project Narrative File attachments, please use the attachment buttons below.

Add Optional Project Narrative File

Delete Optional Project Narrative File

View Optional Project Narrative File

BUDGET INFORMATION - Non-Construction Programs

OMB Number: 4040-0006
Expiration Date: 02/28/2022

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Enhanced Air Quality Monitoring for Communities	66.034	\$	\$	500,000.00	\$	500,000.00
2. Match: Enhanced Air Quality Monitoring for Communities	66.034				10,211.00	10,211.00
3.						
4.						
5. Totals		\$	\$	500,000.00	\$ 10,211.00	\$ 510,211.00

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SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total (5)
	(1)	(2)	(3)	(4)	
	Enhanced Air Quality Monitoring for Communities	Match: Enhanced Air Quality Monitoring for Communities			
a. Personnel	\$ 115,302.00	\$	\$	\$	\$ 115,302.00
b. Fringe Benefits	31,830.00				31,830.00
c. Travel	1,146.00				1,146.00
d. Equipment					
e. Supplies	14,863.00	7,187.00			22,050.00
f. Contractual	197,242.00	3,024.00			200,266.00
g. Construction					
h. Other	106,365.00				106,365.00
i. Total Direct Charges (sum of 6a-6h)	466,748.00	10,211.00			\$ 476,959.00
j. Indirect Charges	33,252.00				\$ 33,252.00
k. TOTALS (sum of 6i and 6j)	\$ 500,000.00	\$ 10,211.00	\$	\$	\$ 510,211.00
7. Program Income	\$	\$	\$	\$	\$

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SECTION C - NON-FEDERAL RESOURCES					
(a) Grant Program		(b) Applicant	(c) State	(d) Other Sources	(e)TOTALS
8.	Enhanced Air Quality Monitoring for Communities	\$	\$	\$	\$
9.	Match: Enhanced Air Quality Monitoring for Communities	10,211.00			10,211.00
10.					
11.					
12. TOTAL (sum of lines 8-11)		\$	\$	\$	10,211.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$ 166,668.00	\$ 41,667.00	\$ 41,667.00	\$ 41,667.00	\$ 41,667.00
14. Non-Federal	\$ 10,211.00	10,211.00			
15. TOTAL (sum of lines 13 and 14)	\$ 176,879.00	\$ 51,878.00	\$ 41,667.00	\$ 41,667.00	\$ 41,667.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT					
(a) Grant Program		FUTURE FUNDING PERIODS (YEARS)			
		(b)First	(c) Second	(d) Third	(e) Fourth
16.	Enhanced Air Quality Monitoring for Communities	\$ 166,667.00	\$ 166,667.00	\$ 166,667.00	\$
17.	Match: Enhanced Air Quality Monitoring for Communities	10,211.00			
18.					
19.					
20. TOTAL (sum of lines 16 - 19)		\$ 176,878.00	\$ 166,667.00	\$ 166,667.00	\$

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: 466,748	22. Indirect Charges: 33,252
23. Remarks: HRIa's federally negotiated indirect rate is 22.6% of personnel expenses.	

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Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Western Regional Office • 436 Dwight Street, Springfield MA 01103 • 413-784-1100

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

March 21, 2022

Stacey Chacker
Director, Policy and Practice
Health Resources in Action
2 Boylston Street, 4th Floor
Boston, MA 02116

Dear Ms. Chacker:

I am writing to show our support of Health Resources in Action (HRIA) and your proposal, on behalf of the Massachusetts Asthma Action Partnership (MAAP), for the *Massachusetts Healthy Air Network: Monitoring and Building Capacity for Resilient Communities*. We understand that you are submitting this to the EPA (EPA-OAR-OAQPS-22-01) Enhanced Air Quality Monitoring for Communities Grant Program.

MassDEP is responsible for ensuring clean air and water, safe management and recycling of solid and hazardous wastes, timely cleanup of hazardous waste sites and spills and the preservation of wetlands and coastal resources. MassDEP supports meaningful research that would provide air contaminant data that otherwise would not be available, both particulate matter and ozone.

MassDEP's Western Regional Office is in the process of reviewing air monitoring data and registered MassDEP source emissions as part of a regional initiative to review how facility emissions have changed with implementation of new regulations and retirement/modification of large air emission sources over approximately the past ten years. This data will aid MassDEP in this initiative.

MassDEP supports and is committed to assisting the Massachusetts Healthy Air Network project, which aims to expand Air Quality monitoring in MA environmental justice communities, build a universal statewide data platform (expanding on the Pioneer Valley Healthy Air Network), foster knowledge and build capacity to develop and/or support policies to improve local air quality, and/or take personal action.

This information is available in alternate format. Contact Michelle Waters-Ekanem, Director of Diversity/Civil Rights at 617-292-5751.

TTY# MassRelay Service 1-800-438-2370

MassDEP Website: www.mass.gov/dep

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MassDEP clearly understands that the purpose of the Massachusetts Healthy Air Network project is to build community capacity and collaboration on air quality, climate resilience, environmental justice and health equity in order to address air pollution and improve health outcomes. MassDEP applauds the purpose of the HRiA and supports this project.

We look forward to hearing about the success of your proposal and collaborating on this project. If you have any questions please contact Eva Tor at Eva.Tor@mass.gov or me at Michael.Gorski@mass.gov .

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Gorski", written in a cursive style.

Michael Gorski
Regional Director
Western Regional Office

March 15, 2022

Stacey Chacker
Director, Policy and Practice
Health Resources in Action
2 Boylston Street, 4th Floor
Boston, MA 02116

Dear Ms. Chacker,

On behalf of Earthwatch Institute, I am pleased to provide this letter of commitment to Health Resources in Action (HRiA) for your proposal, on behalf of the Massachusetts Asthma Action Partnership (MAAP), for the *Massachusetts Healthy Air Network: Monitoring and Building Capacity for Resilient Communities*. I understand that you are submitting this to the EPA (EPA-OAR-OAQPS-22-01) Enhanced Air Quality Monitoring for Communities Grant Program.

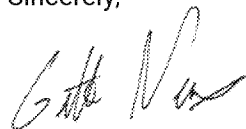
Earthwatch supports the project which aims to expand air quality monitoring in environmental justice communities in Massachusetts, build a universal statewide data platform (expanding on the Pioneer Valley Healthy Air Network), foster knowledge and build capacity to develop and/or support policies to improve local air quality, and/or take personal action. Earthwatch is committed to supporting this project by:

- Developing and delivering training modules as part of the Citizen's Science Learning Community that are interactive and engaging on air quality, environmental justice, communicating results and taking action.
- Serving on the Project team and Advisory Council and/or a committee such as communications, data, and/or data to action.
- Disseminating the website and connecting to other cities about air quality monitoring

Earthwatch's Operation Healthy Air program provides the tools and training needed to empower people to mitigate the exposure to poor air quality and take action to improve air quality. Air quality is a localized challenge, and Earthwatch's participatory science model is best positioned to address a challenge at that level. Our educational curriculum increases participants' understanding of what local air quality means for individuals, and for people living in communities most heavily impacted by poor air quality. As the founding partner of The Pioneer Valley Healthy Air Network, Earthwatch is dedicated towards the expansion of the network in Massachusetts.

I look forward to hearing about the success of your proposal and collaborating on this project. If you have any questions, please contact me at gvenicx@earthwatch.org

Sincerely,



Gitte Venicx, CEO
Earthwatch Institute



March 17, 2022

Stacey Chacker
Director, Policy and Practice
Health Resources in Action
2 Boylston Street, 4th Floor
Boston, MA 02116

Dear Ms. Chacker,

On behalf of Tetrad Sensor Network Solutions, LLC, I am pleased to provide this letter of commitment to Health Resources in Action (HRiA) for your proposal, on behalf of the Massachusetts Asthma Action Partnership (MAAP), for the *Massachusetts Healthy Air Network: Monitoring and Building Capacity for Resilient Communities*. We understand that you are submitting this to the EPA (EPA-OAR-OAQPS-22-01) Enhanced Air Quality Monitoring for Communities Grant Program.

We support the Massachusetts Healthy Air Network project, which aims to expand Air Quality monitoring in MA environmental justice communities, build a universal statewide data platform (expanding on the Pioneer Valley Healthy Air Network), foster knowledge and build capacity to develop and/or support policies to improve local air quality, and/or take personal action. Tetrad Sensor Network Solutions, LLC is committed to supporting this project by providing 70 AirU sensors and data access and air quality visualizations to be provided to EJ communities participating in this project.

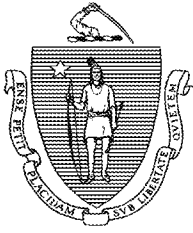
We are dedicated to supporting air quality monitoring work in environmental justice communities in MA burdened by asthma and other chronic conditions related to PM2.5 and ozone.

We look forward to hearing about the success of your proposal and collaborating on this project. If you have any questions please contact me with the information provided below.

Mobile: (801) 833-3617
Email: carl.luft@tetradensors.com

Sincerely,

Carl Luft
Tetrad Sensor Network Solutions, LLC



The Commonwealth of Massachusetts
Executive Office of Health and Human Services
Department of Public Health
250 Washington Street, Boston, MA 02108-4619

CHARLES D. BAKER
Governor

KARYN E. POLITO
Lieutenant Governor

MARYLOU SUDDERS
Secretary

MARGRET R. COOKE
Commissioner

Tel: 617-624-6000
www.mass.gov/dph

March 18, 2022

Stacey Chacker
Director, Policy and Practice
Health Resources in Action
2 Boylston Street, 4th Floor
Boston, MA 02116

Dear Ms. Chacker,

On behalf of the Asthma Prevention and Control Program (APCP) at the Massachusetts Department of Public Health, I am pleased to provide this letter of commitment to Health Resources in Action (HRiA) for your proposal, on behalf of the Massachusetts Asthma Action Partnership (MAAP), for the *Massachusetts Healthy Air Network: Monitoring and Building Capacity for Resilient Communities*. We understand that you are submitting this to the EPA (EPA-OAR-OAQPS-22-01) Enhanced Air Quality Monitoring for Communities Grant Program.

We support the Massachusetts Healthy Air Network project, which aims to expand Air Quality monitoring in MA environmental justice communities, build a universal statewide data platform (expanding on the Pioneer Valley Healthy Air Network), foster knowledge and build capacity to develop and/or support policies to improve local air quality, and/or take personal action. The APCP is committed to supporting this project by:

- Serving on the Advisory Council and committees such as communications, data, and data to action.
- Provide data to identify environmental justice communities most burdened by inequitable asthma outcomes in Massachusetts, and
- Promote and disseminate the project materials, webinars and information to community partners and internal partners within DPH.

As a longtime partner and funder of MAAP the APCP continues to be impressed with MAAP's successful coalition building efforts and commitment to addressing asthma inequities in MA. APCP is excited for the work of the *Massachusetts Healthy Air Network: Monitoring and Building Capacity for Resilient Communities* that is directly aligned with the 2021-2026 Strategic Plan for Asthma in MA and specifically in the goal area focused on outdoor air quality.

We look forward to hearing about the success of your proposal and collaborating on this project. If you have any questions please contact me at Michelle.Warner@mass.gov.

Sincerely,

Michelle Warner

Michelle Warner
Director, Asthma Prevention and Control Program



SMART GROWTH AND REGIONAL COLLABORATION

March 22, 2022

Stacey Chacker
Director, Policy and Practice
Health Resources in Action
2 Boylston Street, 4th Floor
Boston, MA 02116

Dear Ms. Chacker,

On behalf of the Metropolitan Area Planning Council (MAPC), I am please to provide this letter of commitment to the Health Resources in Action (HRiA) for the proposal for the *Massachusetts Health Air Network: Monitoring and Buidling Capacity for Resilient Communities*. We understand that HRiA, in partnership with the Public Health Institute of Western Massachusetts, EarthWatch Institute, and Yale University, is submitting this to the EPA (EPA-OAR-OAQPS-22-01) Enhanced Air Quality Monitoring for Communities Grant Program.

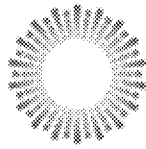
MAPC supports the *Massachusetts Healthy Air Network* project, which aims to expand Air Quality monitoring in MA environmental justice communities, build a universal statewide data platform (expanding on the Pioneer Valley Healthy Air Network), foster knowledge and build capacity to develop and/or support policies to improve local air quality, and/or take personal action.

MAPC's is the Regional Planning Authority for the Greater Boston region and represents 101 cities and towns, including and surrounding the City of Boston. MAPC is committed to equity, and that commitment is a principal focus in our projects and in our community engagement efforts. Through our work we have emphasized the need for more transparency and resources around local air quality for our residents. Air pollution, both indoor and outdoor, poses a major threat to health. Much of the air pollution in Greater Boston comes from the combustion of fossil fuels used in transportation. Risk is elevated for those living near highways and busy roads and we've estimated that over 80% of our residents live with 150 meters of a major roadway. Over one third of our residents live in areas at the highest risk and residents of color are overrepresented in the highest risk group.

MAPC is committed to supporting this project by activating municipal staff and public health officials and engaging them in conversations about the adverse health effects of poor air quality and local actions that can reduce resident exposure. We will in turn work with these municipal stakeholders to expand the air quality discussions with residents and share resources through their networks and channels.

Sincerely,

Barry Keppard
Director
Public Health Department



**PUBLIC HEALTH INSTITUTE
OF WESTERN MASSACHUSETTS**
PARTNERS FOR HEALTH EQUITY

March 10, 2022

Stacey Chacker
Director, Policy and Practice
Health Resources in Action
2 Boylston Street, 4th Floor
Boston, MA 02116

Dear Ms. Chacker,

On behalf of the Public Health Institute of Western MA, I am pleased to provide this letter of commitment to Health Resources in Action (HRiA) for your proposal, on behalf of the Massachusetts Asthma Action Partnership (MAAP), for the *Massachusetts Healthy Air Network: Monitoring and Building Capacity for Resilient Communities*. We understand that you are submitting this to the EPA (EPA-OAR-OAQPS-22-01) Enhanced Air Quality Monitoring for Communities Grant Program.

The Public Health Institute of Western Massachusetts builds measurably healthier and more equitable communities through community engagement, collaborative partnerships, research and evaluation, and policy advocacy. We convene the Pioneer Valley Healthy Air Network, in conjunction with our Pioneer Valley Asthma Coalition and Live Well Springfield Coalitions.

We support the Massachusetts Healthy Air Network project, which aims to expand Air Quality monitoring in MA environmental justice communities, build a universal statewide data platform (expanding on the Pioneer Valley Healthy Air Network), foster knowledge and build capacity to develop and/or support policies to improve local air quality, and/or take personal action.

The Public Health Institute of Western Massachusetts is committed to supporting this project by:

- Serving on the Advisory Council and/or a committee such as communications, data, and/or data to action.
- Collaborating with MAAP partners to support the inclusion of their air sensors on our existing platform. We are interested in connecting to a larger network, and building our capacity to bring data to action.
- Disseminating the website, hosting webinars, and connecting to cities about air quality monitoring.

Through our convening of PVAC and LWS, we are committed to working to address health inequities and environmental injustice experienced by people of color in Springfield and the Pioneer Valley. We are leading air quality monitoring work in our region burdened by asthma and other chronic conditions related to PM2.5 and ozone. Our Pioneer Valley Asthma Coalition is a member of MAAP and we have participated in the planning process for the Strategic Plan for Asthma in MA: 2021-2026, and specifically in the goal area focused on outdoor air quality.

We look forward to hearing about the success of your proposal and collaborating on this project. If you have any questions, please contact me at shudson@publichealthwm.org

Sincerely,

Sarita Hudson
Director of Programs & Development
Public Health Institute of Western MA

PO Box 4895, Springfield, MA 01101-4895 | Phone (413) 794-7739 | FAX (413) 794-1451

www.PublicHealthWM.org | info@PublicHealthWM.org



Department of Health

Three Capitol Hill
Providence, RI 02908-5097

TTY: 711
www.health.ri.gov

March 22, 2022

Stacey Chacker
Director, Policy and Practice
Health Resources in Action
2 Boylston Street, 4th Floor
Boston, MA 02116

Dear Ms. Chacker,

On behalf of the Rhode Island Asthma Control Program (RIACP), I am pleased to provide this letter of commitment to Health Resources in Action (HRiA) for your proposal, on behalf of the Massachusetts Asthma Action Partnership (MAAP), for the *Massachusetts Healthy Air Network: Monitoring and Building Capacity for Resilient Communities*. We understand that you are submitting this to the EPA (EPA-OAR-OAQPS-22-01) Enhanced Air Quality Monitoring for Communities Grant Program.

As a member of the Asthma Regional Council of New England, we support the Massachusetts Healthy Air Network project, which aims to expand Air Quality monitoring in MA environmental justice communities, build a universal statewide data platform (expanding on the Pioneer Valley Healthy Air Network), foster knowledge and build capacity to develop and/or support policies to improve local air quality, and/or take personal action. RIACP is also applying for this funding opportunity and is committed to supporting this project by also working with the Yale School of Public Health to calibrate our air quality monitors so that we can join the MHAN platform and analyze our data on a regional level. We are also proposing to monitor air quality in our community, and are interested in connecting to a larger network, and building our capacity to bring data to action. RIACP intends to partner with HRiA to disseminate the website, host webinars, connect to cities about air quality monitoring. We are interested in continuing to support air quality monitoring work in environmental justice communities in MA burdened by asthma and other chronic conditions related to PM2.5.

We look forward to hearing about the success of your proposal and collaborating on this project. If you have any questions, please contact me at 401-222-6272 or ashley.fogarty@health.ri.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Ashley Fogarty".

Ashley Fogarty, MPH
Program Manager
Rhode Island Asthma Control Program
Rhode Island Department of Health
3 Capitol Hill, Room 408
Providence, RI 02908-5097



State of Rhode Island

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State of Rhode Island

I. COVER PAGE

Project Title: *Massachusetts (MA) Healthy Air Network (MHAN): Monitoring and Building Capacity for Resilient Communities*

Application Information: Health Resources in Action, 2 Boylston Street, 4th Floor, Boston, MA 02116

Primary Contact: Stacey Chacker, Director, Policy and Practice, 617-279-2236, schacker@hira.org

DUNS Number: 125333963

Set-Aside: No Set-Aside

Brief Description of Applicant Organization: Health Resources in Action (HRIA) is a 501(c)3 nonprofit public health organization with a mission to help people live healthier lives and create healthy communities through prevention, health promotion, policy, and research. HRIA organizes both the Massachusetts Asthma Action Partnership (MAAP) and the Asthma Regional Council of New England (ARC), which build capacity to reduce asthma health inequities and improve the quality of life for all people with asthma within their respective geographies. In 2020, MAAP and the MA Department of Public Health (MDPH) led the process to develop the *MA Strategic Plan for Asthma: 2021-2026* (Note: the plan is under final review with MDPH), which provides guidance and inspiration for asthma work focused on prevention and control across MA. It includes broad goals and strategies focused on: schools, housing, outdoor air quality (AQ), and clinical care and linkages. Promoting racial and health equity are guiding principles for the plan, and while it's designed for the entire state, it prioritizes 11 cities. These cities were selected based on high asthma emergency department rates, high prevalence of COVID-19, and low Index of Concentrations at the Extremes scores (a ratio of the concentration of the most privileged to the concentration of the most deprived in a community); this meets environmental justice (EJ) criteria including environmental exposures, racial and health disparities, socioeconomic factors, and sources of pollution (hereinafter referred to as EJ communities).

Project Partners: HRIA/MAAP's principal partner is Dr. Krystal Pollitt from the Yale University School of Public Health (Yale). The Public Health Institute of Western MA (PHIWM), Earthwatch, Metro Area Planning Council (MAPC), and Tetrad Sensor Network Solutions are also partners but with more limited roles.

Project Location: MHAN is prioritizing engagement of three of the following EJ communities, which are prioritized in the *MA Strategic Plan for Asthma: 2021-2026*: Boston, Brockton, Chelsea, Lawrence, Lowell, Lynn, New Bedford, and/or Worcester. We will also engage Springfield, Chicopee, and Holyoke via our partnership with PHIWM; however, they will not receive funds or sensors under this project as they are funded under PHIWM's Pioneer Valley AQ Monitoring Project (PVAQM).

Air Pollutant Scope: PM_{2.5} and ozone (O₃)

Table 1: Budget Summary:

EPA Funding Requested	Total Project Cost
\$500,000	\$510,211

Project Period: November 2022 – November 2025

Short Project Description: The goal of MHAN is to foster knowledge and build capacity at the community-level to improve environmental health conditions in MA communities by expanding AQ monitoring, supporting a learning community, building a statewide universal platform, and disseminating results. MHAN will prioritize three EJ communities' where residents experience disproportionate challenges related to environmental exposures, racial and health disparities, socioeconomic factors, sources of pollution, and are most burdened by asthma, COVID-19, air toxic cancer risk, and other chronic health conditions related to high levels of PM_{2.5} and O₃. To do this, MHAN will: provide funding and AQ sensors to three community (CBO) and/or faith-based organizations (FBO) from separate EJ communities; engage them in the MHAN Citizen Science EJ Ambassadors' Learning Community Data, along with the three PVAQM EJ communities; and invite them to participate in the Data, Research/Communications/Website, and/or Evaluation committee(s). The statewide platform – a mobile friendly website – will provide real-time, easily accessible, actionable data for any interested community monitoring PM_{2.5} and O₃, highlight the EJ communities' stories, and be available in English and Spanish. Finally, MHAN will organize a summit to share findings and data-to-action experiences from the EJ communities.

II. WORKPLAN

Section 1 – Project Summary and Approach

A. Overall Project: With EPA Enhanced AQ Monitoring funding, MHAN will foster knowledge and build capacity at the community-level to improve environmental health conditions in MA communities by expanding AQ monitoring, supporting a learning community, building a statewide universal platform, and disseminating results. MHAN will engage and support three of the following MA EJ communities: Boston, Brockton, Chelsea, Lawrence, Lowell, Lynn, New Bedford, and/or Worcester, while also including Springfield, Chicopee, and Holyoke via our partnership with PHIWM's PVAQM (again, the latter will not receive funding or sensors under this project). These communities all have populations that experience disproportionate challenges related to environmental exposures, racial and health disparities, socioeconomic factors, sources of pollution, and are most burdened by asthma, COVID-19, air toxic cancer risk, and other chronic health conditions related to high levels of PM_{2.5} and O₃. More specifically the MHAH Project Team (PT) will:

1. MHAN PT and Advisory Committee: The PT will meet monthly to plan project activities and monitor progress. MHAN will engage the Advisory Committee quarterly to solicit expertise and guidance on program design, content, implementation, outreach, and other topics that arise.

2. Community Engagement/Power Building: MHAN will engage three CBOs and/or FBOs in separate EJ communities to host calibrated sensors provided by MHAN and to participate in the Ambassadors' Community (see below). We will also engage communities that already or will be placing Purple Air Monitors (Purples); we anticipate at least 340 low-cost air sensors for approximately 40 MA municipalities will be part of the network. This includes: a) Ten AirU sensors to each of three participating CBOs and/or FBOs from separate EJ communities (30 total); b) up to 210 Purples that are being provided to approximately 38 municipalities (5-10 each) from the MA Department of Environmental Protection (MDEP) (*Note: we do not anticipate that all will join, but all are welcome*); c) 65 AirU and Purples that are already part of the PHIWM's PVAQM in Springfield, Chicopee, and Holyoke; d) any other interested party who is monitoring their AQ; and e) 40 AirU sensors that MHAN will co-locate two/municipality with DEP Purples for controls. MHAN will also invite other New England states to have their sensors calibrated (to date, both Connecticut (CT) and Rhode Island (RI) are interested if their proposals are funded). Including the DEP provided Purples will give us a point of comparison between EJ communities and other communities across the state. Any extra AirUs will be provided to interested federally qualified health centers or schools in EJ communities.

3. MHAN universal statewide website: This publicly available mobile friendly website will provide real-time, local PM_{2.5} and O₃ levels from all AQ sensors calibrated to the platform (including outside of MA; in which case, we will consider a name change). It will be designed to be easily accessible and to serve as a trusted source to CBOs and FBOs, residents, advocates, healthcare providers, and municipal, state, and federal agencies (hereinafter referred to as stakeholders). The purpose of the platform is to build awareness, capacity, and understanding of AQ measures. For example, it may be useful to: a) develop local institutional policies (e.g., schools could develop "no outdoor recess" when PM_{2.5} or O₃ are above certain designated levels); b) develop educational programs (e.g., clinicians or Community Health Workers could educate their patients with chronic respiratory or heart conditions about AQ); and c) advocate for or against something in their community (e.g., opposing the siting of a biomass plant, or advocating for electrification of bus fleets focusing on specific neighborhoods most impacted by poor AQ). It will also provide education linking the impacts of air pollution and AQ with climate/disaster resilience, tree-planting, and/or advocacy to address sources of air pollution. In collaboration with PVAQM, MHAN will build on, learn from their experiences, and expand their platform – *the Pioneer Valley Healthy Air Network*¹ – building the MHAN platform. It will be available in Spanish and English.

4. Citizen Science EJ Ambassadors' Learning Community (hereinafter, Ambassadors' Community): CBOs and FBOs working in MAAP EJ communities will be invited to participate in an informational webinar and to apply

¹ Pioneer Valley Healthy Air Network. (n.d.). Retrieved March 23, 2022, from <https://pvhealthyair.org/>

to participate via a simple application. MHAN will provide \$30,000 and 10 AirU sensors to each of three participating CBOs and/or FBOs from separate EJ communities. The CBOs/FBOs will each have a lead – and up to four members – participate in the Ambassadors' Community. The PT will engage Ambassadors in at least seven interactive virtual workshops to provide training on topics such as: a) why monitor -- AQ, public health, and the connection to the legacy of racism; b) strategically placing monitors near hotspots/getting buy-in from building owners; c) how to maintain a monitor/trouble shooting; d) communicating/using the data; and e) other topics that are identified by the cohort through discussion and polls. We will hold additional meetings (up to monthly as needed) to support technical assistance (TA), exchanges/peer learning, strategizing, etc. Again, Springfield, Chicopee, and Holyoke will be invited to participate in the cohort but will not receive MHAN funding or sensors. MHAN will also provide engaging and culturally relevant templates and materials for cohort members to use for presentations in their communities and will hold individual check-in meetings/TA for the three Ambassador groups. If needed, interpretation services in Spanish will be available. Ambassadors will work in their own communities to place and maintain sensors, increase awareness about AQ in their community, and identify opportunities and/or take action based on their community priorities.

5. Quarterly Committees: MHAN will create the following committees comprised of PT members, at least one representative from the Ambassadors' Community, and other stakeholders to provide expertise and perspectives. 1) **Data:** The purpose will be to review data analysis, looking for patterns, opportunities for interpretation, hotspots, etc. We will encourage the use of this data – and hold up examples of data to action; 2) **Research/Communications/Website:** The purpose will be to: a) determine what to include on the MHAN website (based on results from surveys, interviews, and focus groups; and b) strategize messaging and provide feedback on developed materials. To facilitate development of AQ visualizations that are meaningful to the community, graphics detailing pollutant variation will be shared with the Ambassadors' Community, and will be tested in community stakeholder focus groups and/or interviews, to assure that the AQ information will be presented in an accessible manner and tailored to the cultural and socioeconomic attributes of residents; and 3) **Evaluation:** The purpose will be to contribute to evaluation design and feedback from the community focused on engagement, communications, data to action, etc.

6. Dissemination Campaign: To disseminate the MHAN website will be co-branded, and linked to the PT websites, including Yale, PHIWM, Earthwatch, Ambassadors, MAPC, and other stakeholders. The PT will develop a Dissemination Toolkit to build awareness, capacity, and understanding of AQ measures by providing sample newsletter articles, blogs, and tweets, and educational materials linking the impacts of air pollution and AQ with education on climate/disaster resilience, tree-planting, and/or advocacy to address sources of air pollution. Many will be available in Spanish as well. Outreach activities will strategically be timed to leverage specific days/weeks/months such as Outdoor AQ Week and Asthma and Heart Health Months.

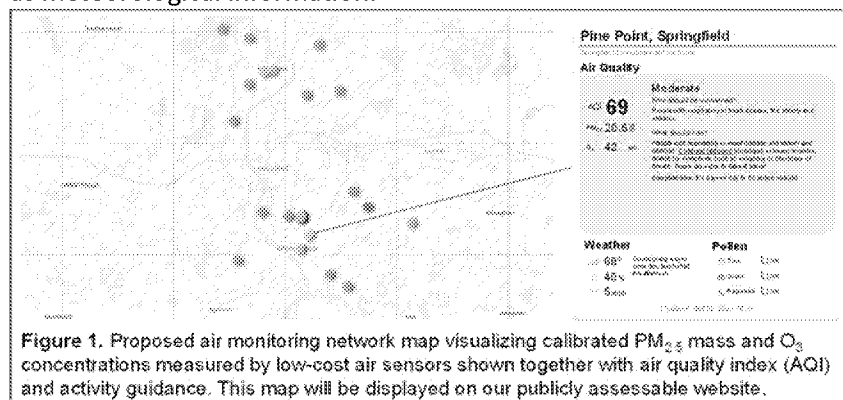
7. MHAN Summit: The PT will organize an-person (ideally, COVID dependent) summit to share results obtained over the course of the three-year project, including an analysis of findings to uplift Ambassador stories and data-to-action to network and plan together. All stakeholders will be invited to participate.

B. Project Significance: PM_{2.5}, and O₃ have been shown to contribute to morbidity for several chronic diseases including asthma, chronic obstructive pulmonary disease, cardiovascular disease, and most recently, COVID-19. The poorest and most marginalized EJ communities in MA suffer from poor ambient AQ due to multiple mobile and point sources including large inter-state and state highways, railroad lines running directly through residential neighborhoods, truck and bus depots, and industrial sites. In many of these communities, residences, schools, and playgrounds are immediately adjacent to highways, truck or bus depots, and industry. High levels of exposure are evidenced in the disproportionate rates of asthma experienced in cities, which are significantly higher than statewide and almost double the national rates (reference Table 3 below in EJ section). Furthermore, PM_{2.5}, O₃, and other outdoor air pollution predominantly impacts communities of color.

Warming climate projections are expected to worsen AQ in communities. For example, according to data from the Resilient MA Climate Change Clearinghouse and Northeast Regional Climate Center, the average annual temperatures in the MA portion of the CT River Basin are expected to rise by an estimated 3.88°F over

the next three decades, with an average increase of 15 days above 90° each year². Local ambient air temperatures will be even higher in the developed industrial areas of the prioritized EJ cities where the effects of urban heat island are already apparent relative to the surrounding neighborhoods. Rising temperatures increase the production of O₃ and the number of “unhealthy” days, thereby increasing morbidity for people with mentioned health conditions and exacerbate existing health disparities³.

Existing monitoring networks across MA are limited. Low-cost sensor networks can supplement existing EPA/research monitoring networks and provide increased spatial and temporal resolution, capturing variations in local sources. MHAN will provide opportunities to increase understanding of AQ in higher risk EJ communities, providing opportunities for highlighting periods with poor AQ. The PT will develop dynamic spatial models of PM_{2.5} mass and O₃ concentrations using the calibrated real-time, low-cost air sensors. These models will integrate the calibrated low-cost sensor measurements, EPA monitoring and satellite data, as well as meteorological information.



The MHAN website will include an interactive map displaying AQ levels from the monitors. An example of this platform is shown in **Figure 1** from PVHAN. MHAN will include communities access to real-time and historic PM_{2.5} and O₃ concentrations for individual monitoring locations. With this information, the PT will provide the Air Quality Index (AQI). The AQI and activity guidance will be shown for the criteria air pollutant

with the highest levels. Meteorological data (wind, temperature, humidity) and pollen levels will also be shown. In addition to presenting information for individual monitoring locations, the interactive map will include a spatial model of current PM_{2.5} and O₃ levels for the entire state – with highlights sharing stories from the Ambassadors’ Community. The platform will be scalable and able to include additional low-cost air sensors as well as other available online environmental sensors in MA and other states in the Northeast.

Section 2 – Community Involvement

A. Community Partnerships (See attached letters of commitment): HRIA/MAAP has extensive experience and commitment to a coordinated approach for promoting healthy learning environments and applying a health and racial equity lens to programs that address asthma inequities across MA. Established in 2008, MAAP consists of over 100 members and coordinates with representatives from the state and city, public health, environmental and housing agencies, schools, healthcare providers, CBOs and FBOs, community health workers, local asthma coalitions, and occupational health and safety organizations. MAAP has subject matter expertise (SME) around asthma and a long history in convening and facilitating asthma learning communities, committees, summits, and trainings. In 2020, in collaboration with the MDPH, MAAP engaged over 60 MA stakeholders in a five-month process to develop the *Strategic Plan for Asthma in MA: 2021- 2026*; this entire plan leads with promoting health and race equity – prioritizing the 11 cities in MA with the greatest population of people of color; highest rates of poverty and economic hardship; and that are most burdened by asthma, COVID-19, air toxic cancer risk, and other chronic health conditions. One of the four goals is, “Achieve AQ levels that support equitable asthma prevention and control and improve the overall health of residents in

² Resilient Ma Action Team (RMAT). Mass.gov. (n.d.). Retrieved March 23, 2022, from <https://www.mass.gov/info-details/resilient-ma-action-team-rmat>

³ J. M. J. T. (2021, September 21). *Air pollution: Everything you need to know*. NRDC. Retrieved March 23, 2022, from <https://www.nrdc.org/stories/air-pollution-everything-you-need-know>

MA". Three objectives under this goal are to: 1) expand local real time AQ monitoring; 2) educate about AQ and mitigation strategies for those with asthma; and 3) decrease and/or mitigate near roadway pollution. MHAN builds on a collaboration that sprung from the plan in 2021. With initial funds from the MA Attorney General's office, PHIWM – a long-time member of MAAP which serves on the Steering Committee – established the PVAQM in collaboration with Yale, MAAP, and Earthwatch. Again, MHAN is building on this collaboration. MHAN partnerships are described in Table 2.

Table 2: Community Partnerships

Partner / Advisor	Assets to Leverage for MHAN
Yale University School of Public Health, Dr. Krystal Pollitt (Yale)	Will maintain a database of calibrated and cleaned data from all low-cost air sensors included in the network; share fine particulate matter (PM _{2.5}) and O ₃ measurements on an interactive map that will be included on MHAN's website; serve as a SME for the project; provide training as part of the Ambassadors' Community; and disseminate the website, host webinars, and connect to cities about AQ monitoring.
Public Health Institute of Western MA (PHIWM)	Will serve on the Advisory Committee and on committees relating to data, communications, and evaluation; help to support the Ambassadors' Community and connect to Springfield, Chicopee, and Holyoke; support the MHAN website – based on PVHAN; and disseminate the website and other materials.
Earthwatch	Will serve on the Advisory Committee, and design and deliver educational workshops for the Ambassadors' Community, tailoring as needed, to specific communities.
Tetrad Sensor Network Solutions	Will provide 70 AirU sensors, data access, and AQ visualizations to EJ communities participating in this project – at a 35% discount.
Metropolitan Area Planning Council (MAPC)	Will promote MHAN, the website, and other materials via MAPC's networks within the 101 municipalities of their region and via the other MA planning agencies.
MDPH Asthma Prevention and Control	Will serve on Advisory Committee, provide data to ID EJ most burdened by asthma outcomes in MA, and promote and disseminate the project materials, webinars, and information to community partners and internal partners within MDPH.

B. Community Engagement: HRiA has 60 years of extensive and successful community engagement experience, and values and prioritizes participatory engagement and collaboration to achieve the most ideal and impactful outcomes for communities. Community engagement is an essential pillar of each project activity. MHAN will provide open access to data anywhere these calibrated air sensors in MA are, and potentially in other New England states. MHAN will provide to each of three participating CBOs and/or FBOs from separate EJ communities: \$30,000 and 10 AirU sensors (30 total). The CBOs/FBOs will each have a lead – and up to four members – participate in the Ambassadors' Community. Through a supported process, each will determine where to place the sensors in their community, depending on their own local concerns and priorities, and add their voice to the design of the website to make it most accessible/impactful for the community. In addition to participating in the Ambassadors' Community, we will invite/encourage them to participate on any of the committees – Data, Research/Communications/Website, and/or Evaluation. Each CBO and/or FBO will strategize local steps for data to action (e.g., requesting a policy for “no recess” days, or advocating for an electric bus fleet on certain bus routes) based on the priorities and needs of their community. They will link the MHAN website to their own website and promote it with dissemination materials provided by the project. They will be invited and supported to present at the MHAN Summit.

C. Community-Based Organization Set-Aside: Not Applicable

Section 3 – Environmental Justice and Underserved Communities

Through MHAN's website, we will include air sensors from any municipality interested in being in the network; however, center our efforts on the three funded EJ communities and include the three EJ communities engaged in PVAQM. The three funded EJ communities will be from Boston, Brockton, Chelsea, Lawrence, Lowell, Lynn, New Bedford, and/or Worcester where residents experience disproportionate challenges related to environmental exposures, racial and health disparities, socioeconomic factors, sources of pollution, and are most burdened by asthma, COVID-19, air toxic cancer risk, and other chronic health conditions related to high

levels of PM_{2.5} and O₃ (see Table 3). In addition, EPA's EJ Screening and Mapping Tool confirms the above and depicts the severity among MAAP EJ communities, especially when overlaying the comparative data categories. All MAAP EJ communities are at a minimum in the 80th percentile of EJ indexes, with many areas within each community between the 90th and 100th percentiles⁴.

The PT understands that systemic racism is the root cause of injustice and inequity across all institutions⁵, including disparities in environmental wellness and AQ, and actively seeks to address systemic racism through existing health equity initiatives. Racially discriminatory policies, such as redlining, continue to negatively impact the most vulnerable populations and continue to shape systemic environmental exposure disparities in the US, exposing people of color to higher levels of air pollution, including PM_{2.5} levels and disproportionate negative health outcomes from COVID-19. The *Attorney General's Report: COVID-19's Unequal Effects in MA: Remedying the Legacy of Environmental Injustice and Building Climate Resilience*⁶ provides comparative COVID-19 community data, indicating that communities of color experience significantly higher COVID-19 infection, hospitalization, and age-adjusted mortality rates. The barriers and lack of/inability to access care during the pandemic is a symptom of the root cause of inequity and disparities EJ communities face daily.

MHAN aims to provide information to the most impacted and vulnerable communities to increase understanding and reduce risks; engage community members with data to support policies/campaigns to mitigate risks; and aim to change the conditions to reduce air pollutant emissions and human exposure. Throughout each project phase and activity, MHAN will ensure participatory engagement with communities through project design, planning, implementation, performance, and sustainability planning.

Table 3: Demographics and Health Indicators in MA EJ Communities

Community	Total Population ⁷	% Population by Race	% Population Living in Poverty	Asthma ER visits per 10,000 ⁸	Pediatric Asthma Prevalence	% Census Block Groups with 1+ EJ criteria ⁹	Total COVID-19 Case Counts ¹⁰
MA Statewide	6,984,723	<ul style="list-style-type: none"> 12.4% Latinx 9% Black 7.2% Asian 16.8% immigrants 	9.4%	58.2	12.1	12.1%	1,550,911
Boston	675,647	<ul style="list-style-type: none"> 24.2% Black 19.5% Latinx 9.8% Asian 28.2% immigrants 	18%	90.8	16.8	76.6%	166,877
Brockton	95,594	<ul style="list-style-type: none"> 45.6% Black 11.1% Latinx 	14.8%	114.5	15.1	96.6%	29,036
Chelsea	39,992	<ul style="list-style-type: none"> 67% Latinx 	18.1%	103.5	10.5	100%	15,195

⁴ Environmental Protection Agency. (n.d.). EPA. Retrieved March 23, 2022, from <https://www.epa.gov/ejscreen>

⁵ *The groundwater approach*. Racial Equity Institute. (n.d.). Retrieved March 23, 2022, from <https://www.racialequityinstitute.com/groundwaterapproach>

⁶ *Covid-19's unequal effects in Massachusetts* | *mass.gov*. (n.d.). Retrieved March 23, 2022, from <https://www.mass.gov/doc/covid-19s-unequal-effects-in-massachusetts/download>

⁷ *U.S. Census Bureau quickfacts: Massachusetts*. (n.d.). Retrieved March 23, 2022, from <https://www.census.gov/quickfacts/MA>

⁸ *Massachusetts Environmental Public Health Tracking*. Asthma Overview | MEPHT. (n.d.). Retrieved March 23, 2022, from <https://matracking.ehs.state.ma.us/Health-Data/Asthma/index.html>

⁹ *Massachusetts Cities & Towns with environmental justice populations*. EJ 2020 Communities Statistics.pdf | *Mass.gov*. (n.d.). Retrieved March 23, 2022, from <https://www.mass.gov/doc/massachusetts-cities-towns-with-environmental-justice-populations>

¹⁰ Health, D. of P., & Executive Office of Health and Human Services. (n.d.). *Covid-19 response reporting*. *Mass.gov*. Retrieved March 23, 2022, from <https://www.mass.gov/info-details/covid-19-response-reporting>

		<ul style="list-style-type: none"> • 32.8% Bi-racial 					
Holyoke	38,238	<ul style="list-style-type: none"> • 54.6% Latinx 	27.5%	220.1	19.9	78.4%	12,709
Lawrence	79,942	<ul style="list-style-type: none"> • 80.6% Latinx 	19%	126.2	16.6	100%	36,654
Lowell	111,306	<ul style="list-style-type: none"> • 23% Asian • 18.1% Latinx 	19%	85.3	15.3	87.5%	34,087
Lynn	93,743	<ul style="list-style-type: none"> • 42.8% Latinx • 13.7% Black 	16.6%	80.9	12.3	93.1%	32,513
New Bedford	95,239	<ul style="list-style-type: none"> • 20.8% Latinx 	20.3%	109.4	18.2	79.3%	32,692
Springfield	155,929	<ul style="list-style-type: none"> • 45.7% Latinx • 20.9% Black 	25.5%	192.6	16.6	95%	54,943
Worcester	185,143	<ul style="list-style-type: none"> • 21.9% Latinx • 13.3% Black 	20%	94.5	14.8	82.6%	53,484

Section 4 – Environmental Results—Outcomes, Outputs, and Performance Measures

A. Expected Project Outputs and Outcomes: Linkage to EPA Strategic Plan: MHAN aligns with EPA’s Draft Fiscal Year (FY) 2022-2026 Strategic Plan’s goals to ensure scientific integrity and science-based decision-making (Strategy 1); consider vulnerable populations (Strategy 2); advance EPA’s organizational excellence and workforce equity (Strategy 3); and strengthen partnerships and enhance engagement (Strategy 4). More specifically, MHAN aligns with Goal 2: Take decisive action to advance EJ and civil rights and Goal 4: Ensure clean and healthy air for all communities. Through this project, MHAN will promote EJ by prioritizing the most at-risk communities and vulnerable populations in MA, providing data, and building capacity to take action, improve AQ, and reduce/mitigate localized pollution and health impacts.

Outputs: MHAN will have the following outputs: a) Calibrate at least 340 monitors from approximately 40 MA municipalities to the MHAN website – as described above; this includes 210 Purples provided by MDEP to 38 communities (5-10 each); 30 AirU sensors placed in the three Ambassador communities; 65 AirU and Purples that are already part of the PHIWM’s PVAQM in Springfield, Chicopee, and Holyoke; any other interested party who is monitoring their AQ; and 40 AirU sensors that MHAN will co-locate and/or distribute to health centers and/or schools in EJ communities; b) Provide \$30,000 to each of the three CBOs and/or FBOs which are participating in the Ambassadors’ Community; c) At least seven workshops provided to the CBO’s and/or FBOs as part of the Ambassadors’ Community – with participants from up to six communities; d) The MHAN website; and e) the MHAN Summit.

Outcomes: MHAN’s short-term outcomes include the: identification of increased environmental exposures and the need to enhance AQ monitoring in and by MAAP EJ communities and increased access to information and tools through MHAN’s publicly available website and ongoing educational opportunities (e.g., workshops, summit, etc.) to increase understanding of environmental human health risks in and by MAAP EJ communities. **MHAN’s intermediate outcomes include the:** communities investing and taking ownership over state/local policy actions and taking action to mitigate risks, such as requesting a policy for “no recess” days or advocating for an electric bus fleet on certain bus routes based on the priorities and needs of the community. **MHAN’s long-term outcomes include the:** reduction of air pollutant emissions and human exposure to PM_{2.5} and O₃ levels, and improved AQ monitoring, climate resilience measures, and reduction in racial and health disparities in MAAP EJ communities.

B. Performance Measures and Plan

The PT will track and monitor MHAN’s progress and performance will include both process and outcomes measures including: 1) the number of MAAP EJ communities represented and the number of sensors calibrated in each community; 2) three CBOs and/or FBOs engaged in the Ambassadors’ Community and their level of engagement, including the number of participants in the Ambassadors’ Community meetings (ideally two to five/Ambassador and one to three from each of the three PVHAQM communities); successful

placement and maintenance (with assistance) of 10 sensors/Ambassador community; dissemination of the website; development of at least one practice or policy recommendation; and participation in three committees and the MHAN summit; 3) the establishment and build out of the MHAN website, highlighting the overall AQ monitoring and actions of the three Ambassador communities; and 4) quantifying the dissemination by the number of links to the MHAN website, log of newsletter articles, social media posts, and/or earned media focused on the MHAN program. Additionally, for project evaluation purposes, the PT will develop and implement post-workshop surveys, interviews, and focus groups to collect quantitative and qualitative data by: a) assessing participant knowledge gained from the platform, workshops, etc.; b) document the policies/practices that participants implement/pilot (or intend to); c) identify additional training or TA needs; d) build the MHAN website to maximize accessibility and priorities; and e) adapt MHAN project activities based on participant feedback.

MHAN will track and report project progress on expenditures and purchases by maintaining a separate, unique accounting record for funds received and expenses incurred under this Agreement. All documents, such as bills, invoices, cancelled checks, bank statements, and receipts shall be retained to support any audit reports relating to the funds received under this Agreement at any time such audit is conducted.

C. Timeline and Milestones

Table 4: MHAN's Activities, Timeline, and Milestones

Project Activities	Timeline	Milestones
1.1 Convene the PT monthly.	Q1-Q12	Attendance list, agendas, and notes.
1.2 Convene the Advisory Committee quarterly; consult individually as needed.	Q1-Q12	Attendance list, agendas, and summary of minutes; outreach strategy to inform Project Activity 2.
2.1 Outreach to CBOs and/or FBOs through targeted communication and an informational webinar about the MHAN Ambassadors' Community.	Q1-Q2	Webinar, slide deck, and attendance list.
2.2 Develop a simple application for MAAP EJ communities and an Agreement Letter for engagement of three CBOs and/or FBOs in separate MAAP EJ communities.	Q1-Q2	Application and Agreement Letter completed and approved by the PT and/or Advisory Committee.
2.3 Engage CBOs and/or FBOs.	Q1-Q2	Three CBOs and/or FBOs submit simple application and agreement letters signed.
2.4 Provide \$30,000 and 10 AirU sensors to each to three participating CBOs and/or FBOs from separate EJ communities (30 total).	Q2-12	Funding and AirU sensors provided. Calibrated AirU sensors placed in strategic locations in the communities.
2.5. Outreach to 38 municipalities hosting 60 Purples provided by MDEP	Q1-Q3	At least 38 municipalities join MHAN to have their sensors calibrated; anticipated 210 Purples calibrated.
2.5 Outreach to PHIWM's PVAQM in Springfield, Chicopee, and Holyoke to engage in Ambassador Community	Q2-Q12	PVAQM communities participate in the Ambassadors' Community (as we are building on PVHAN, their monitors will already be calibrated).
2.6. Outreach to New England states to have sensors calibrated if interested (CT and RI are interested if their proposals are funded).	Q1-Q10	New England states (CT and RI – if funded) join MHAN to have their sensors calibrated.
3.1 Build the MHAN universal platform.	Q1-Q4	MHAN's website basics built with monitoring platform and connection of AQ to asthma and other public health concerns, prioritizing EJ communities.
3.2 Check in about useability of platform via Ambassador Community and focus groups and/or interviews with community members.	Q3-6	Feedback notes from interviews, focus groups, and/or Ambassadors' Community.
3.3 Continue to build out and enhance MHAN website.	Q5-QQ12	Website enhanced - based on feedback, enhance or improve website accessibility to community members,

		including highlights of EJ Ambassadors' stories and data-to-action. Collect feedback again for quality assurance and accessibility of website.
3.3 Ensure MHAN's website is accessible in Spanish.	Q5-Q2	MHAN's website will have a translation option for Spanish.
4.1 Develop workshop content for Ambassadors' Community.	Q2-Q11	Agendas, slide decks, and materials for at least seven workshops.
4.2 Facilitate at least seven Ambassadors' Community workshops (three in Y1, two in Y2, and two in Y3); 11-20 (bi-monthly or more as needed) additional meetings; and one-on-one TA check-ins quarterly (or more as needed) to provide support/strategy around issues described above in Ambassadors' Community.	Q2-12	Meeting agendas, culturally relevant workshop materials, and summary of minutes from workshops and TA sessions.
4.3 Obtain feedback from workshops through pre-and-post workshop survey.	Q2-12	Quantitative and qualitative data collected and analyzed via survey tools and feedback mechanisms.
5.1 Create and convene Data, Research/Communications/Website, and Evaluation Committees comprised of PT members, at least one representative from the Ambassadors' Community, and other stakeholders/advisors.	Q2-12	Attendance list, agendas, and summary of minutes.
6.1 Develop a Dissemination Campaign and Toolkit, including sample social media post templates and images, newsletter language templates, and talking points.	Q4 – launch; then update bi-annually or as needed.	Dissemination Toolkit about project-related air pollution and AQ monitoring capacity building opportunities and tools; develop outreach strategy for Project Activity 6.3.
6.2 Obtain feedback from Dissemination Campaign through surveys, interviews, and focus groups.	Q4-12	Quantitative and qualitative data collected and analyzed via survey tools and feedback mechanisms.
6.3 Update MHAN's webpage/portal and promote via MHAN newsletter, social media, and partners' communication platforms and websites.	Q4 – launch, then quarterly	MHAN newsletter articles and promotion via partners/advisors: MDPH, PHIWM, Yale, Earthwatch, MAPC, and outside of MA, as well as featured in MAAP newsletters and website.
7.1 Organize education summit to share MHAN project results and to strategize.	Q10-12	Attendance list, workshop agendas, and summary of minutes.
7.2 Obtain feedback from MHAN Summit through surveys, key informant interviews, and focus groups.	Q9-12	Quantitative and qualitative data collected and analyzed via survey tools and feedback mechanisms.
7.3 MHAN to monitor progress and report to the EPA on a quarterly basis.	Q2-12	Quarterly report submitted to the EPA.

Section 5 – Quality Assurance Statement *(See attached form)*

Section 6 – Programmatic Capability and Past Performance

A. Past Performance: Over the last three years, HRiA received federally funded assistance agreements indicated below, and successfully completed and management the agreements.

Table 5: HRiA Past Grant Management Experience

Funded Assistance Agreements	Funding Agency	Funding Amount	Completed	Successful completion & management?	History of on-time reporting?
Narrowing the Gap: Promoting Racial and Health Equity in Asthma Across New England	EPA Region One HC 00A00524-0	\$25,000	12/31/2021	Yes	Yes

The NJ In-Home Asthma Intervention Pilot Project	<u>The Nicholson Foundation</u>	\$400,000	6/30/2021	Yes	Yes
Asthma & Climate Change: Building New England Knowledge and Capacity for Action	EPA Region One EPA - HC - 00A00226	\$25,000	6/30/2019	Yes	Yes
LEAH Knox Scholars Biomedical Research Program	NIH Secondary Education Partnership Award	\$1,200,000	To be completed 8/31/2022	Will successfully complete by 8/31/2022	Yes
Empowering Boston Youth-EPA Environmental Education Grant	EPA Region One HC 00A00471	\$91,000	12/31/2019	Yes	Yes

B. Reporting Requirements: For each agreement listed above, HRiA met all reporting requirements. HRiA reported on progress on time regarding achieving the expected outputs and outcomes, as well as successfully submitted final technical reports under the agreements. For the LEAH Know Scholars Biomedical Research Program, HRiA continues to meet all reporting requirements, reports on progress on time, and will successfully submit a final technical report under the agreement.

C. Staff Expertise *(See attached resumes for more details)*

Stacey Chacker, Director, Policy and Practice, HRiA has over thirty years of experience providing strategic leadership on policy, advocacy, program planning/partnership development, and research on environmental health/justice issues at the community and governmental levels. She has led HRiA's asthma and environmental health work for 13 years, including directing MAAP and ARC, and the New England Asthma Innovation Collaborative, which was awarded an EPA National Environmental Leadership Award in Asthma Management in 2016. Prior to HRiA, Stacey worked in East Boston MA for 18 years, on environmental justice and community development organizing. She is proficient in Spanish. **Krystal Godri Pollitt, Ph.D., P.Eng**, Assistant Professor of Epidemiology & Chemical & Environmental Engineering, Yale University. Dr. Pollitt's work is to better understand the relationship between exposure to complex mixtures of air pollutants and disease. Her research is focused on developing novel analytical approaches to characterize personal environmental exposures to understand how these pollutant exposures can adversely affect health. She has been a key partner in the PVAQM and set-up the platform, PVHAN. **Geraldine Medina**, Capacity Building Manager, HRiA is skilled at providing TA and capacity building to CBOs and FBOs related to public health, and specifically COVID-19. Prior to HRiA, Geri worked in clinical research, including a Boston University (BU) study using a text-based application to address pediatric dental health disparities and at the Framingham Heart Study; she also worked for a nonprofit that provides FMT treatments for microbiome-mediated diseases and conducts microbiome research. In May 2022, Geri will complete her MPH at BU School of Public Health, with a focus on Environmental Health. Through her studies, she has participated in AQ monitoring in schools in MA EJ communities, and home inspections for environmental issues. She serves on the board of Somerville Groundworks, and in 2020 ran a mutual aid association in Boston. She is fluent in Spanish.

Section 7 – Budget

A. Budget Detail: HRiA respectfully requests \$500,00 to support MHAN from November 2022 to November 2025. The PT will leverage \$10,211 in in-kind support from contractual services/equipment, for a total project cost of \$510,211. Funding from the EPA will make up 98% of the project cost, with in-kind 2%. Over the three-year period, these funds will cover: **Personnel:** \$115,302 for salaries (1.44 FTE). This includes \$32,765 for 0.28 FTE of the Project Director (\$115,000 annual salary); \$12,142 for 0.21 FTE of the Project Coordinator (\$55,000 annual salary); \$30,718 for 0.48 FTE of the Project Manager (\$62,500 annual salary); \$7,173 for 0.08 FTE of the Research Lead (\$92,000 annual salary); \$6,237 for 0.06 FTE of the Website Lead (\$107,000); \$8,088 for 0.11 FTE of the Communications Lead (\$74,000 annual salary); \$16,594 for 0.21 FTE of the Website Manager (\$75,912); and \$1,585 for 0.01 FTE of the Research Advisor (\$145,000 annual salary). **Fringe Benefits:** includes payroll taxes (\$10,089), health insurance, retirement, life/long-term disability insurance, workers' compensation insurance, unemployment insurance, etc., and is budgeted at 27.61% of salaries for a total of

\$31,830. **Travel:** \$1,146 for approximately 1,976 miles traveled within MA at \$0.58 cents/mil plus tolls; **Supplies:** \$14,863 for 70 Air Sensor units with \$7,187 in-kind match for a total of \$22,050 or \$315 each (they are providing a discount for the sensors); **Contractual:** \$197,242 in total: \$137,650 for Yale; \$12,000 for Earthwatch; \$4,000 for MAPC; \$8,000 for translation services; \$25,000 for PHIWM; \$8,000 for a graphic artist; and \$2,592 for Tetrad-AirU Labor with \$3,024 in-kind match for a total of \$5,616 (Tetrad is providing their services at a discount). **Other:** \$106,365 in total: \$90,000 subawards for 3 CBOs at \$30,000 each; \$5,000 for facility rental; \$4,800 for online & data services; \$6,565 allocated at \$9,629 per FTE for 1.44 FTE for non-personnel expenses, such as office supplies, rent, utilities and maintenance, phone and internet, postage, etc. This formula-based practice has been approved by the EPA office over the last few years. This FTE allocation does not include travel, meetings, and consultants. **Indirect Charges:** \$33,252 calculated at 22.6% of personnel expenses (HRiA's federal approved indirect rate). Without EPA funding, HRiA will not have the resources to conduct the work proposed here.

Table 6: Budget

Line Item & Itemized Cost	EPA Funding
Personnel	
1. Project Director @ \$84/hr x 2.5hrs/wk x 156 wks	\$32,765
2. Project Coordinator @ \$40/hr x 1.9hrs/wk x 156 wks	\$12,142
3. Project Manager @ \$46/hr x 4.3hrs/wk x 156 wks	\$30,718
4. Research Lead @ \$67/hr x 0.7hrs/wk x 156 wks	\$7,173
5. Website Lead @ \$78/hr x 0.5hrs/wk x 156 wks	\$6,237
6. Communications Lead @ \$54/hr x 1.0hrs/wk x 156 wks	\$8,088
7. Website Manager @ \$55/hr x 1.9hrs/wk x 156 wks	\$16,594
8. Research Advisor @ \$106/hr x 0.1hrs/wk x 156 wks	\$1,585
TOTAL PERSONNEL	\$115,302
Fringe Benefits	
28% of Salary and Wages @ 28% x Total Personnel – Retirement, Health Benefits, FICA, SUI, etc.,	\$31,830
TOTAL FRINGE BENEFITS	\$31,830
Travel	
Mileage for Staff: 9.5 miles/wk @ \$0.58/mi x 208 wks	\$1,146
TOTAL TRAVEL	\$1,146
Equipment	
TOTAL EQUIPMENT	\$0
Supplies	
Air Sensor @ \$315/unit x 70 units exclusive of \$7,187 in-kind match	\$14,863
TOTAL SUPPLIES	\$14,863
Contractual	
Yale School of Public Health	\$137,650
MAPC	\$4,000
EarthWatch	\$12,000
Translator	\$8,000
PHIWM	\$25,000

Tetrad - Air U exclusive of \$3,024 in-kind match	\$2,592
Graphic artists	\$8,000
TOTAL CONTRACTUAL	\$197,242
Other	
Subaward Costs - 3 CBOs x \$30k grants	\$90,000
Facility Rental - Summit	\$5,000
Online & Data Services	\$4,800
Shared Program Expenses (allocated at \$9,629 per FTE for non-personnel shared expenses)	\$6,565
TOTAL OTHER	\$106,365
Indirect Charges	
Federal Indirect Cost Rate x Personnel = Indirect Costs (Federal Negotiated Indirect Cost Rate = 22.6%)	
TOTAL INDIRECT	\$33,252
TOTAL FUNDING	\$500,000
TOTAL PROJECT COST Exclusive of \$10,211 in-kind match from Tetrad	\$500,000

B. Reasonableness of Costs

The expenses include a) Yale's federally approved overhead of 67.5%; b) the AirU sensors – with weather protection, cables, and other accessories are \$315/each. We are purchasing this equipment for a total of \$22,050, but with a discount from Tetrad – so the total cost in EPA funding would be \$13,347 for the purchase of the 70 AirU sensors; c) \$90,000 for three CBOs and/or FBOs. The \$30,000 each will support staff and/or stipends for community members to participate in the project – including the Ambassadors' Community, subcommittees, getting sensors placed and maintaining them, and other efforts. This is critical to honor their time in this project; d) \$5,000 for facility rental and associated costs for the summit in Year Three (our hope is that we will be able to safely gather in person); and e) \$4,800 for online and data services to maintain the website.

C. Expenditure of Awarded Funds

HRiA has over 60 years of experience working with federal, state, and local government, as well as nonprofit CBOs and philanthropy. HRiA's reach and impact is supported by an Administration and Finance staff with expertise in contracts management, human resources, information technology, and operations. HRiA's budget is approximately \$30 million, with nearly 200 active projects. HRiA adheres to GAAP and FASB guidelines for non-profit and government grant accounting. HRiA is audited annually, in compliance with OMB Circular A-133 by an independent auditing firm. HRiA's independent auditors' review of our FY2020 financial records and fiscal policies and procedures found no material weaknesses or significant deficiencies. HRiA qualifies as a "low risk" auditee under OMB standards. Revenue and expenses for all programs are tracked at the project or grant level to ensure against over-spending or inappropriate billing. Each program has an annual budget and monthly monitoring reports are generated by the fiscal office. The Project Manager will meet regularly with fiscal staff to review project revenue and expenses and ensure that the project is being carried out on time and on budget. She will also be responsible for communicating regularly with EPA contacts to ensure that project expectations are met and required reporting is being carried out.



Health Resources in Action
Advancing Public Health and Medical Research

Nondiscrimination Compliance Coordinator

Mitzi Fennel, Chief Operating Officer
Health Resources in Action
2 Boylston St
Boston, MA 02116
E-mail: mfennel@hria.org
Phone: 617-451-0049



Policy on Nondiscrimination in Programs Receiving Federal Assistance from the U.S. Environmental Protection Agency

Introduction

Title 40 of the Code of Federal Regulations (CFR), Part 7, Nondiscrimination in Programs or Activities Receiving Federal Assistance from the Environmental Protection Agency, prohibits discrimination on the basis of race, color, national origin, age, sex, or handicap in programs or activities receiving federal assistance from the U.S. Environmental Protection Agency (U.S. EPA). It requires recipients of federal assistance from the U.S. EPA to:

- Collect, maintain, and provide information showing compliance with 40 CFR, Part 7;
- Designate a person to be the Nondiscrimination Compliance Coordinator (NCC) to coordinate efforts to comply with 40 CFR, Part 7;
- Adopt grievance procedures that assure the prompt and fair resolution of discrimination complaints alleging violations of 40 CFR, Part 7; and
- Provide continuing and prominent public notice of nondiscrimination on the basis of race, color, national origin, age, sex, or handicap, and of the identity and contact information for the NCC.

As set forth below, it is the Health Resource in Action's (HRIA) policy not to discriminate on the basis of several factors, including those in 40 CFR, Part 7. In addition, HRIA adopts the following procedures to implement the requirements of 40 CFR, Part 7.

Procedures to Implement the Requirements of 40 CFR, Part 7

Compliance Information

HRIA shall collect, maintain, and on request of the U.S. EPA, Office of Civil Rights (OCR), provide the following information to show compliance with 40 CFR, Part 7:

- A brief description of any lawsuits pending against HRIA that allege discrimination which 40 CFR, Part 7, prohibits;
- Racial/ethnic, national origin, age, sex, handicap, and disability data, or EPA Form 4700-4 information submitted with HRIA applications for U.S. EPA assistance;
- A log of discrimination complaints that identifies the complaint, the date it was filed, the date HRIA's investigation was completed, the disposition, and the date of disposition;
- Reports of any compliance reviews conducted by any other agencies;
- Additional data and information specific to certain HRIA programs or activities to determine compliance where there is reason to believe that discrimination may exist in a



HRIA program or activity or to investigate a complaint alleging discrimination in a HRIA program or activity;

When preparing compliance information, HRIA shall use the racial classifications set forth in 40 CFR, Section 7.25, in determining categories of race, color, or national origin;

HRIA shall keep records of the compliance information identified in paragraphs (1)(a) and (1)(b), above, for at least three years after completing a project for which HRIA was a recipient of U.S. EPA assistance. When any complaint or other action for alleged failure by HRIA to comply with 40 CFR, Part 7, is brought before the three- year period ends, HRIA shall keep records until the complaint is resolved; and

HRIA shall:

- Give OCR access during normal business hours to its books, records, accounts, and other sources of information, including its facilities, as may be pertinent to ascertain compliance with 40 CFR, Part 7;
- Make compliance information available to the public upon request; and
- Assist in obtaining other required information that is in the possession of other state agencies, institutions, or persons not under HRIA's control. If such party refuses to release that information, HRIA shall inform the OCR and explain its efforts to obtain the information.

Nondiscrimination Compliance Coordinator (NCC)

The President of HRIA designates the person holding the position of Chief Operating Officer as HRIA NCC responsible to coordinate HRIA's efforts to comply with its obligations under 40 CFR, Part 7.

Grievance Procedures

HRIA adopts the following grievance procedures in order to assure the prompt and fair resolution of complaints that allege a violation by HRIA of 40 CFR, Part 7:



Step	Who	Does What
1	Complainant	<p>Submittal of Complaint:</p> <p>In order to have a complaint submittal considered for investigation under this procedure, the complainant shall file the complaint no later than 180 calendar days after the date(s) of the alleged act(s) of discrimination.</p> <p>The complaint shall be in writing and signed by the complainant or the complainant's representative and shall include contact information for the complainant or their representative.</p> <p>The complaint shall specify with as much detail as possible:</p> <ul style="list-style-type: none">• The actions or inactions by HRiA that support an alleged violation of 40 CFR, Part 7;• The alleged discrimination that did or will result from such actions or inactions;• The identity of the person(s) harmed or potentially harmed by the alleged discrimination; and• The section of 40 CFR, Part 7, that HRiA allegedly violated. <p>HRiA may request additional information from the complainant if needed to assist with meeting the complaint requirements listed above. Appropriate assistance shall be provided to individuals with disabilities and individuals with limited English proficiency. Also, complaints in alternate formats shall be accepted from individuals with disabilities, for example, complaints filed on computer disks, on audio tape, or in Braille.</p> <p>All complaint submittals should be mailed (or e-mailed) to the NCC at the following address:</p> <p style="text-align: center;">Chief Operating Officer Health Resources in Action 2 Boylston St Boston, MA 02116</p> <p style="text-align: center;">E-mail: mfennel@hria.org</p>



Step	Who	Does What
2	NCC	<p>Logging of Complaint Submittals:</p> <p>All complaint submittals are to be logged. The NCC shall retain a copy of all documents on file in accordance with the records retention schedule. The NCC shall also notify the relevant program manager(s).</p> <p>The following are examples of what will not be logged as a complaint submittal:</p> <ul style="list-style-type: none">• Anonymous submittals;• Submittals too vague to reasonably determine the allegations of discriminatory conduct;• Submittals not sufficiently identifying the person(s) harmed or potentially harmed by the alleged discrimination;• Inquiries seeking advice or information;• Courtesy copies of court pleadings;• Courtesy copies of complaints addressed to other local, state, or federal agencies;• Newspaper articles;• Web-based media sources such as YouTube videos, e-mail strings, blogposts, comments strings, or Web pages;• Courtesy copies of internal grievances; and• Voice mail messages, phone calls, or in-person conversations.
3	NCC	<p>Initial Review of Complaint Submittals:</p> <p>Upon receipt of a complaint and any additional information supporting or otherwise associated with the complaint, a case file shall be established containing all documents and information pertaining to the complaint and an initial review of the case shall be conducted.</p>



Step	Who	Does What
4	NCC	<p>Determination if Complaint Warrants Further Investigation:</p> <p>The NCC, based on information in the complaint submittal and other information available, shall determine if:</p> <ul style="list-style-type: none">• HRIA has jurisdiction to pursue the matter; and• The complaint submittal contains sufficient merit to warrant further investigation. <p>A complaint shall warrant further investigation unless:</p> <ul style="list-style-type: none">• It clearly appears on its face to be frivolous or trivial;• Within the time allotted for making the determination of jurisdiction and investigative merit, HRIA reaches an agreed resolution with the complainant;• Within the time allotted for making the determination of jurisdiction and investigative merit, the complainant withdraws the complaint; or• The complaint was not submitted within the time limit established in Step 1. <p>Within 14 calendar days of receipt of the complaint submittal, the NCC shall inform the complainant if the complaint has or has not been accepted for further investigation. If it is determined that further investigation is not warranted, the reason for such determination shall be recorded in the case file.</p>
5	NCC	<p>Further Investigation of Complaint:</p> <p>If the NCC determines the complaint submittal warrants further investigation, the NCC shall review the alleged facts to determine the course of the investigation. The investigation may include interviews of HRIA employees, other relevant witnesses, or others named in the complaint. Relevant HRIA employees shall make themselves available as necessary.</p>
6	NCC	<p>Report and Determination:</p> <p>The NCC shall issue a report and determination on whether HRIA violated 40 CFR, Part 7. The NCC shall prepare a written report of the investigation that shall include a narrative of the incident, an identification of individuals interviewed and evidence reviewed, and findings and a determination. The report and determination shall be placed in the complaint file.</p> <p>Within 180 calendar days of receiving the complaint that warranted investigation, the NCC shall notify the complainant in writing of the findings of the investigation and the recommendations for resolution.</p>



Step	Who	Does What
7	Complainant	Appeal: The person submitting the complaint may appeal the decision of the NCC by writing to HRiA President within 30 calendar days of receiving the NCC's decision. HRiA President shall issue a written decision in response to the appeal no later than 30 calendar days after its filing.

Notice of Nondiscrimination

HRiA shall provide continuing notice that it does not discriminate on the basis of race, sex, religion, age, national origin, color, marital status, handicap, disability, political beliefs, height, weight, genetic information, or sexual orientation in any of its programs or activities. Methods of notice shall accommodate those with impaired vision or hearing. At a minimum, this notice shall be posted in a prominent place in HRiA's offices or facilities. Methods of notice may also include publishing in newspapers and magazines and placing notices in HRiA's publications.

Where appropriate or upon request, such notice shall be in a language or languages other than English. The notice shall identify the current HRiA NCC as the responsible HRiA employee designated to coordinate HRiA's efforts to comply with its obligations under 40 CFR, Part 7. The text of the notice to be provided under this policy shall read as follows:

It is the policy of HRiA not to discriminate on the basis of race, sex, religion, age, national origin, color, marital status, handicap, disability, political beliefs, height, weight, genetic information, or sexual orientation. In compliance with Title 40 of the Code of Federal Regulations (CFR), Part 7, HRiA has adopted an internal grievance procedure providing for prompt and equitable resolution of complaints alleging a violation of 40 CFR, Part 7. HRiA Director has designated the Chief Operating Officer as HRiA Nondiscrimination Compliance Coordinator (NCC). Laws and regulations related to this policy may be examined in the NCC's office.



Department of the Treasury
Internal Revenue Service

P.O. Box 2508
Cincinnati OH 45201

In reply refer to: 0248232325
Dec. 05, 2018 LTR 4168C 0
04-2229839 000000 00
00012361
BODC: TE

HEALTH RESOURCES IN ACTION INC
2 BOYLSTON ST STE 4
BOSTON MA 02116

000980

Employer ID number: 04-2229839
Form 990 required: Yes

Dear Taxpayer:

We're responding to your request dated Nov. 27, 2018, about your tax-exempt status.

We issued you a determination letter in October 1957, recognizing you as tax-exempt under Internal Revenue Code (IRC) Section 501(c)(3).

We also show you're not a private foundation as defined under IRC Section 509(a) because you're described in IRC Sections 509(a)(1) and 170(b)(1)(A)(vi).

Donors can deduct contributions they make to you as provided in IRC Section 170. You're also qualified to receive tax deductible bequests, legacies, devises, transfers, or gifts under IRC Sections 2055, 2106, and 2522.

In the heading of this letter, we indicated whether you must file an annual information return. If you're required to file a return, you must file one of the following by the 15th day of the 5th month after the end of your annual accounting period:

- Form 990, Return of Organization Exempt From Income Tax
- Form 990EZ, Short Form Return of Organization Exempt From Income Tax
- Form 990-N, Electronic Notice (e-Postcard) for Tax-Exempt Organizations Not Required to File Form 990 or Form 990-EZ
- Form 990-PF, Return of Private Foundation or Section 4947(a)(1) Trust Treated as Private Foundation

According to IRC Section 6033(j), if you don't file a required annual information return or notice for 3 consecutive years, we'll revoke your tax-exempt status on the due date of the 3rd required return or notice.

You can get IRS forms or publications you need from our website at www.irs.gov/forms-pubs or by calling 800-TAX-FORM (800-829-3676).

If you have questions, call 877-829-5500 between 8 a.m. and 5 p.m.,

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HEALTH RESOURCES IN ACTION INC
2 BOYLSTON ST STE 4
BOSTON MA 02116

local time, Monday through Friday (Alaska and Hawaii follow Pacific time).

Thank you for your cooperation.

Sincerely yours,

A handwritten signature in dark ink, appearing to read 'K. A. Billups', is written over a horizontal line.

Kim A. Billups, Operations Manager
Accounts Management Operations 1

Yale SCHOOL OF PUBLIC HEALTH
Department of Environmental Health Sciences

March 17, 2022

Stacey Chacker

Director, Policy and Practice
Health Resources in Action
2 Boylston Street, 4th Floor
Boston, MA 02116

Dear Ms. Chacker,

I am pleased to provide this letter of commitment to Health Resources in Action (HRIA) for your proposal, on behalf of the Massachusetts Asthma Action Partnership (MAAP), for the Massachusetts Healthy Air Network: Monitoring and Building Capacity for Resilient Communities. I understand that you are submitting this to the EPA (EPA-OAR-OAQPS-22-01) Enhanced Air Quality Monitoring for Communities Grant Program.

I am an Assistant Professor in the Department of Environmental Health Sciences at the Yale School of Public Health and hold a cross-appointment in the Department of Chemical and Environmental Engineering. My PhD explored the impact of short-term air pollutant exposure on cardiorespiratory health as part a collaborative project with King's College London, University of Birmingham, Utrecht University and the Dutch National Institute for Public Health and the Environment. I was subsequently awarded a Canadian Thoracic Society Postdoctoral Research Fellowship focused on characterizing personal exposure to complex environmental exposures and their impact on respiratory health. My current research combines my interests and expertise in exposure science and analytical chemistry and aims to understand the health effects of indoor and outdoor pollutants using novel sensor technology. *This application expands on my experience establishing air monitoring networks using low-cost sensors in Western Massachusetts as part of the Pioneer Valley Healthy Air Network (pvhealthyair.org). This air monitoring network was created together with numerous local organizations and city officials with the objective of building community capacity, leadership and collaboration on air quality, climate resilience, environmental justice, and health equity.*

I support the Massachusetts Healthy Air Network project, which aims to expand Air Quality monitoring in Massachusetts environmental justice communities, build a universal state-wide data platform (expanding on the Pioneer Valley Healthy Air Network), foster knowledge and build capacity to develop and/or support policies to improve local air quality, and/or take personal action.

KRYSTAL POLLITT, PH.D., P.ENG.

Assistant Professor

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New Haven CT 06520-8034
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F 203 737-6023
krystal.pollitt@yale.edu
publichealth.yale.edu

courier

Environmental Health Sciences
LEPH
Room 444
New Haven CT 06520



As a project partner in this proposal, I commit to participate in the following activities over the three-year project period:

- Install, calibrate, and maintain a network of low-cost air sensors across communities in Massachusetts;
- Maintain a database of calibrated and cleaned data from all low-cost air sensors included in the network;
- Share fine particulate matter (PM_{2.5}) and ozone measurements on an interactive map that will be included on the network website;
- Serve as a subject expert for the project and provide training as part of the Citizen's Science Learning Community; and,
- Disseminate the website, host webinars, connect to cities about air quality monitoring.

Thank you for the opportunity to express both my support for HRiA's application "Massachusetts Healthy Air Network: Monitoring and Building Capacity for Resilient Communities." and my commitment to partnership on the proposed program implementation to achieve the stated goals. I look forward to continuing our successful and productive work together. If you have any questions, please contact me at krystal.pollitt@yale.edu.

Sincerely,

Krystal Pollitt, Ph.D., P.Eng.

Assistant Professor

Yale School of Public Health

Yale School of Engineering and Applied Science

Stacey Chacker

Director, Policy and Practice, Health Resources in Action

2 Boylston Street, Boston, MA 02116

Phone: 617-451-0049, ext. 536 Email: schacker@hria.org

**Professional
Experience**

**Health Resources in
Action, Director, Policy
and Practice**
2008-Present

Public Health/Health Care Integration: Community Health Workers:

- Established and directed New Jersey In-home Asthma Intervention Pilot Project, aimed at improving asthma outcomes and reducing healthcare costs in children on Medicaid.
- Developed partnership and successful \$4.2 million proposal to the Center for Medicare and Medicaid Innovation Award to establish and support the New England Asthma Innovation Collaborative (NEAIC), a multi-state, multi-sector partnership health care systems/providers and payers, workforce development specialists, and policy makers. Directed and served as co-PI for NEAIC.

Partnership Management & Capacity Building:

- Directs the Massachusetts Asthma Action Partnership, a statewide coalition which promotes education, best practices, and policies, with an aim to eliminate exposures to environmental triggers and air quality in homes, schools, and community, and increase access to culturally competent clinical care to support asthma management.
- Directs the Asthma Regional Council of New England to build/promote capacity, collaboration and sustainability to address the environmental aspects of asthma. Provide technical assistance to government policy makers and NGO leaders to assist them in identifying and addressing important public and environmental health challenges through evidence-based policy and systems change strategies.

Technical Assistance, Assessments and Engagement

- Oversees the provision of technical assistance (TA) by HRiA staff to 60 community and faith based organizations working to reduce COVID-19 infections, morbidity, and mortality among Asian, Black, Indigenous, Latinx, and other people of color in MA's hardest hit cities and towns, as well as to support education and vaccination efforts.
- Provides TA to promote sustainability for asthma home visiting and Community Health Workers for the National Center for Health Homes.
- Completes assessments on a breadth of public health topics – from Medicaid payment, sodium reduction, asthma interventions, Community Health Workers, environmental health, food access, etc. Conduct on-line research, focus groups, key informant interviews. Synthesize findings into actionable reports.
- Serves on the Community Engagement Core and oversee recruitment for Center for Research on Environmental & Social Stressors in Housing Across the Life Course a joint initiative between Harvard and Boston University Schools of Public Health.
- Recruited, hired, trained and/or supervised staff, VISTA, interns, and volunteers.
- Co-founded/directed the Chelsea Creek Restoration Partnership to advocate for environmental justice. Highlights include resident-driven community master plan, brownfield conversion into a park, and defeat proposed diesel power plant.
- Developed and managed capital and program budgets.
- Raised over \$3.5 million for brownfield and schoolyard redevelopment and civic engagement projects, and annual department budget with multiple funding streams.

**Director, Community
Building and
Environment
Department**
1997-2008

Community Organizer
1990-1996
**Neighborhood of
Affordable Housing**
East Boston, MA

- Built programs focused on youth organizing and development; community planning; educational programs; and building political power within the Latino community.
- Organized Boston's first schoolyard renovation. Advocated for and served on Mayor's Schoolyard Taskforce, leading to the establishment of Boston Schoolyard Initiative. Led community-organizing process for redevelopment of five Boston public schoolyards, engaging

parents, teachers and neighbors, and a Boston Housing Authority development courtyard. Improvements valued at over \$1.7 million.

- Directed public policy advocacy on a range of issues (e.g. Community Stabilization, Community Preservation, In-State Tuition, Environmental Justice, etc.).
- Organized tenants in 402-unit and 380-unit HUD-assisted developments in successful campaigns to maintain affordable housing.
- Coordinated business peer-lending program, Working Capital, in Spanish and English

**Community Health
Development
Coordinator**

1985-1988

U.S Peace Corps

Central African Republic

- Involved in Traditional Midwife Training Program
- Designed training materials, instructed traditional midwives and conducted community meetings on health-related issues; all work conducted in Sango and French.
- Conducted evaluation and report (in French) for CAR Public Health Department.

Education

Clark University

Worcester, MA

Bachelor of Arts, magna cum laude, Phi Beta Kappa

Major: Urban Social Geography

May 1984

Selected Publications & Conference Publications

Tomsho, K.S.; Polka, E.; **Chacker, S.**; Queeley, D.; Alvarez, M.; Scammell, M.K.; Emmons, K.M.; Rudd, R.E.; Adamkiewicz, G. Characterizing the Environmental Health Literacy and Sensemaking of Indoor Air Quality of Research Participants. *Int. J. Environ. Res. Public Health* **2022**, *19*, 2227.

Tschudy MM, Sharfstein J, Matsui E, Barnes CS, **Chacker S**, Codina R, Cohn JR, Sandel M, Wedner HJ. 2017. Something New in the Air: Paying for Community-Based Environmental Approaches to Asthma Prevention and Control. *Journal of Allergy and Clinical Immunology*. February 10.

Chacker S, "Promoting Sustainable Financing for CHWs", Families USA Health Action Conference, 2/27/19

Chacker S, "Clearing the Air: An Asthma Toolkit for Healthy Schools", NESchool Nurse Conference, 5/5/18

Chacker S, "Health and Economic Outcomes and Leveraging Results for a for a CHW-led Intervention", American Public Health Association (APHA), 11/1/16

Chacker S, "Promoting Sustainability for CHW-led Asthma Home Visiting: Engaging Medicaid Payers in the Process", North Carolina Forum on Sustainable In-Home Asthma Management, 9/13/16 Association for Community Health Improvement, National Conference, 3/2/16, Icahn School of Medicine 11/20/15,

APHA 11/4/15, CMS QualityNet Conference, 9/29/15, National Network Public Health Institutes 5/14/15

Chacker S, "The Intersection of Health and Housing/Community Development: Working Together to Create Policy Solutions for All", New England Housing Network Annual Conference, 12/12/14

Krystal Pollitt

Environmental Health Sciences, School of Public Health, Yale University
60 College Street, Room 523, New Haven, CT, 06520
Phone: (203) 737-1444 Email: krystal.pollitt@yale.edu Twitter: @PollittKrystal

Professional Experience

2018 – Present **Assistant Professor of Epidemiology**

Environmental Health Sciences, School of Public Health

Chemical and Environmental Engineering, School of Engineering & Applied Science

Yale University, New Haven

2015 – 2018 **Assistant Professor and the Commonwealth Honors College Professor in Environmental Health Science**

Environmental Health Sciences, School of Public Health and Health Sciences

Civil and Environmental Engineering, College of Engineering

University of Massachusetts, Amherst

2011 – 2014 **Canadian Thoracic Society Research Fellow**

Chemical Engineering and Applied Chemistry, University of Toronto and

Toronto General Research Institute, University Health Network

2007 – 2012 **Honorary Research Associate**, Division of Environmental Health and Risk Management

School of Geography, Earth and Environmental Sciences, University of Birmingham

Education

2007 – 2012 **PhD, School of Biomedical and Health Sciences**

Medical Research Council Centre for Environment and Health

King's College London, United Kingdom

Thesis: Particulate Oxidative Activity and the Impact on Acute Human Respiratory Responses

2005 – 2007 **MASc, Chemical Engineering and Applied Chemistry**

Southern Ontario Centre for Atmospheric Aerosol Research

University of Toronto, Canada

Thesis: Chemical Composition Fluctuations in the Gaseous and Particulate Phases of Urban Aerosols

2001 – 2005 **BASc, Chemical Engineering and Applied Chemistry**

University of Toronto, Canada

Certification

2015 Professional Engineers Ontario, Professional Engineer Licensure 100198489

Research Interests

My PhD explored the impact of short-term air pollutant exposure on cardiorespiratory health. I was subsequently awarded a Canadian Thoracic Society Postdoctoral Research Fellowship focused on characterizing personal exposure to complex environmental exposures and their impact on respiratory health. My current research combines my interests and expertise in exposure science and analytical chemistry and aims to understand the influence of environmental exposures on the mechanisms of disease. My laboratory has developed analytical techniques to detect complex mixtures of environmental factors at the individual level. To facilitate measurement, I led the design, fabrication, and validation of a wearable passive air sensor, called the Fresh Air wristband. When coupled with high-resolution mass spectrometry, this wristband can be used to evaluate an individual's exposure to thousands of chemicals. Analysis of the wristbands by PCR can further be used to detect exposure a range of nucleic acids from respiratory viruses, including adenovirus, rhinovirus, and coronavirus. The low-cost design of this wristband has enabled the occurrence and distribution of exposures to be evaluated across numerous international study populations, including multiple low- and middle-income locations (South Africa, India, China).

I am also interested in using low-cost air sensor technology to monitor exposure to criteria air pollutions in real-time. Together with the Public Health Institute of Western Massachusetts, Earthwatch, LiveWell Springfield, ReGreen Springfield and several local organizations, I established the Pioneer Valley Air Monitoring Network. This air sensor network includes 55 monitoring sites that stream measurements of PM_{2.5} mass concentration and O₃ directly to a publicly accessible interactive website. This monitoring network was setup to raise awareness of poor air quality in this region that includes multiple environmental justice areas.

My work has resulted in 79 published peer-reviewed papers and 2 book chapters as of March 1, 2022. These publications have received a total of 2912 citations with an h-index of 30 and i10-index of 46.

Google Scholar Profile: <https://scholar.google.com/citations?user=bbIUkCIAAAAJ&hl=en>

Key paper include:

- a. Lin, Z., Esenther, S.E., Mascelloni, M., Irfan, F., **Godri Pollitt, K.J.** (2020) The Fresh Air Wristband: Profiling Environmental Exposures using a Wearable Air Pollutant Monitor. *Environmental Science and Technology Letters*. 7(5): 308.
- b. Doherty, B.T. Koelmel, J.P. Lin, E.Z. Romano, M.E. **Godri Pollitt, K.J.** (2021) Use of Exposomic Methods Incorporating Sensors in Environmental Epidemiology. *Current Environmental Health Reports*. 8:34-41.
- c. **Godri Pollitt, K.J.**, Maikawa, C.L., Wheeler, A.J., Weichenthal, S., Dobbin, N., Liu, L., Goldberg, M.S. (2016) Trace metal exposure is associated with increased exhaled nitric oxide in asthmatic children. *Environmental Health*. 15:94.
- d. Weichenthal, S., Lavigne, E., Evans, G.J., **Godri Pollitt, K.J.**, Burnett, R.T. (2016) PM_{2.5} and emergency room visits for respiratory illness: Effect modification by oxidative potential. *American Journal of Respiratory and Critical Care Medicine*. 194(5):577-586.
- e. **Godri, K.J.**, Harrison, R.M., Evans, T., Baker, T., Dunster, C., Mudway, I.S., Kelly F.J. (2011) Increased oxidative burden associated with the traffic component of ambient particulate matter at roadside and urban background schools sites in Greater London. *PLoS ONE*. 6(7):e21961.

Other Experience and Professional Memberships

- 2015 Reviewer, Health Canada, Clean Air Regulatory Agenda Program
- 2016 Reviewer, Research Councils UK, Newton Fund, NERC
- 2017 – 2018 Ad Hoc Reviewer, NIH Adult Psychopathology and Disorders of Aging (APDA) Study Section
- 2020 Reviewer, NIH National Institute on Alcohol Abuse & Alcoholism (NIAAA) Study Section
- 2020 – 2021 Reviewer, NSF SBIR/STTR Panel
- 2022 Ad Hoc Reviewer, NIOSH Study Section
- 2019 Editorial Board, Toxics (MDPI)
- 2020 Associate Editor, Air Quality, Atmosphere & Health (Springer)
- 2020 Associate Editor, Current Environmental Health Reports (Springer)
- 2021 Associate Editor, Exposome (Oxford University Press)
- 2011 Member, American Association of Aerosol Research
- 2017 Member, International Society for Exposure Science
- 2019 Member, International Society for Environmental Epidemiology
- 2018 Steering Committee Member, Pioneer Valley Asthma Coalition (PVAC)

Honors and Awards

- 2012 Best Poster Award, American Association of Aerosol Research Annual Meeting
- 2013 – 2014 Canadian Thoracic Society Fellowship
- 2016 Sustainability Teaching Fellowship, University of Massachusetts, Amherst, MA
- 2017 Centre for Research on Families Scholar, University of Massachusetts, Amherst, MA
- 2019 Rita Wilson Seed Grant Winner, InnovateHealth Yale
- 2021 Yale School of Public Health Early Career Research Award

Ex. 6 Personal Privacy (PP)

Education

Boston University School of Public Health

Master of Public Health (MPH), Environmental Health

Expected Spring 2022

Marlboro College

Bachelor of Arts in Anthropology, Graduated with Honors

May, 2011

Professional Experience

Health Resources in Action | Capacity Building Assistance, Manager

October 2021 – Present

- Manage and support a cohort of 20+ grassroots community and faith-based organizations throughout MA under a CDC grant to perform COVID-19 educational and vaccination outreach efforts through technical and capacity building assistance
- Collaborate with the Department of Public Health Vaccine Equity Initiative team to promote outreach and engagement

Massachusetts Reform Law Institute | Practicum Student

June 2021 – Present

- Practicum student assisting Boston-area legal aid organizations such as City Life/ Vida Urbana, Greater Boston Legal Services & others on eviction and housing-related legal cases & supporting the Manufactured Homes Commission on housing and health issues affecting the manufactured home communities of MA
- Perform residential housing inspections, including making remedial recommendations, and providing assistance with legal strategy in tenant eviction cases
- Lead a COVID-19 project with the Department of Public Health to increase vaccine access and resources to manufactured homes communities in MA

Framingham Heart Study | Research Study Assistant

May 2021 – October 2021

- Supported a multigenerational & multi-ethnic, longitudinal human subjects research study identifying the common factors or characteristics that contribute to cardiovascular disease (CVD) among 6,000+ participants in Framingham, MA
- Coordinated all outreach, translation, and cultural sensitivity in retention efforts for Spanish-speaking participants, including administering health questionnaires

Boston University, iSmile Research Study | Research Assistant

May 2019 – May 2021

- Supported an NIH-funded randomized control trial to test the efficacy of a parent-targeted text message-based intervention program on caries incidence and oral health behaviors among 750+ caregivers and children
- Directly enrolled over 100 participants across 4 clinical sites into the study within 9 months, specifically among Spanish-speakers
- Conducted in-person pediatric dental exams across 4 clinical sites and during at-home visits

OpenBiome | External Affairs Associate

June 2018– May 2019

- Developed, designed, and authored materials for patient and clinical education, including translation of patient documents into Spanish and designed and updated our website content
- Assisted in media relations work, including interfacing with journalists, sharing website and media content about current research, and contributing to our social media presence
- Organized presence at external events including national conferences and science festivals, and hosted external visitors at our offices and labs

Leadership

• JP/Roxbury Mutual Aid, Organizer

Co-organizer of a neighborhood mutual aid network in response to the Covid-19 pandemic, including helping to develop a hotline, food distribution network, cash disbursement system, collaborations with other mutual aid organizations and local groups, guiding principles, and organizing multiple grassroots fundraisers and applying for community grants (including the City of Boston Resiliency Fund and the New England Grassroots Fund) to raise over \$100,000 for direct monetary assistance for neighbors

• MassUndocuFund, Intake Volunteer

Assist Spanish-speaking applicants in applying to the MassUndoFund, a grassroots volunteer-run fund created in March 2020 to support Massachusetts-based immigrants (particularly undocumented immigrants) with financial relief and resources throughout the Covid-19 pandemic; connect applicants with community resources including food distribution sites, information about housing relief, and obtaining assistance through community organizations in their area. In this role I organized a diaper drive through a City of Boston grant to support Boston-area caregivers with diaper distributions during the Covid-19 pandemic, including organizing the logistics and volunteers for distribution and delivering diapers to families.

- **Tri-Alpha (First-Generation Students) National Honor Society, Inductee**

- **Boston Children's Hospital Community Food Pantry, Advisory Board Member**

Working to establish the first BCH-affiliated community food pantry in Jamaica Plain, MA

- **BUSPH Environmental Health Diversity & Inclusion Committee, Student Committee Member**

- **CitySprouts, Summer Garden volunteer**

Volunteered for two seasons to care for the David A. Ellis Elementary School in Roxbury, MA during the summer months

Fundraised \$1,315 for the organization by participating as a half-marathon runner in the Cambridge Half Marathon in 2019

Languages & Skills

- CITI certification

- Language & Translation: Fluent in Spanish and English, Proficient in French, Beginner in Arabic

- Proficient in Microsoft Office, Advanced Excel, RedCap, CRM, Salesforce, Adobe Suite, Social Media Platforms, Squarespace, Canva; Beginner in R Programming

Relevant Coursework

Climate Change and Public Health

- Identified pathways that link changes in climate and weather with health impacts in populations with a focus on health equity issues, as well as explored ways that communities can build resilience against climate-related health impacts.

- Final project was a research presentation on climate change adaptation strategies being utilized by the Quinault Indian Nation in Washington State

Local and Global Public Health Impacts of COVID-19

- Studied the impacts of Covid-19 from clinical, epidemiological, sociological, and policy perspectives.

- Final project was a presentation titled "Vaccine Availability does not equal Vaccine Accessibility: Addressing Vaccine Disparities" addressing COVID-19 vaccine disparities involving case studies among various US Cities & initiatives.

Assessment and Planning for Health Promotion

- Worked with large data sets (U.S. Census, Department of Public Health, and Lawrence, MA Covid-19 data) and geographic/mapping data, as well as conducted key informant interviews to assess health promotion needs of vulnerable youth communities of Lawrence, Massachusetts and produce a community needs assessment report and presentation.

Intervention Strategies for Health Promotion

- Applied the intervention planning framework to accomplish specific and measurable objectives for the adoption, implementation, and sustainability of a designed intervention.

- Final project was an expanded intervention utilizing community healthcare workers to target home-based (environmental) asthma triggers in pediatric patients residing in Boston Housing Authority housing.

Individual, Community, and Population Health

- Coursework grounded in program design, implementation, monitoring, and evaluation, including studying public health issues through various public health frameworks & social determinants of health.

- Final project focused on addressing the mental health responses and impact of climate disaster, specifically the impact of Hurricane Katrina on youth, and addressed structural public health responses to future climate disaster in vulnerable regions.

Health System, Law, and Policy

- Examined the constitutional, regulatory, political, and socio-economic bases of public-health related policies

SECTION 5 – QUALITY ASSURANCE STATEMENT

For the Massachusetts Healthy Air Network (MHAN), outdoor air quality will be monitored across approximately 40 communities in MA using approximately 340 low-cost air sensors. This includes 65 sensors that have already been installed in Springfield, Chicopee, and Holyoke as part of the Pioneer Valley Healthy Air Network (PVHAN), approximately 210 that are being provided by the MA Department of Environmental Protection (MDEP) (to up to 38 communities (5-10 each), and 30 that MHAN is providing to three additional Environmental Justice (EJ) communities, participating in our Citizen Science Ambassadors' Learning Community. MHAN is also offering to include sensors from other New England states. The sensors will all be calibrated following the quality assurance described in this statement.

The low-cost sensors have the capacity to supplement traditional monitoring networks with additional spatial and temporal measurement resolution if the data quality is sufficient. MHAN's Yale team, led by Dr. Krystal Pollitt, will implement quality control measures to ensure a high standard of data quality. They will be responsible for all aspects related to quality assurance and quality control of data acquired through this project. Data will be in the form of fine particulate matter (PM_{2.5}) mass concentration and ozone (O₃) concentrations measured by two types of low-cost air sensors: the Purple Air PA-II-SD - and the Tetrad AirU (hereinafter AirU). These sensors will be used to characterize the spatial and temporal variability of the criteria pollutants of interest. Accuracy and precision will be evaluated against the regulatory instruments. To examine regional and seasonal variation in low-cost air sensor measurements, calibration factors will be developed for individual sensors.

Selection of Monitoring Locations: Installation sites will include a mixture of locations proximal to known air emission sources of concern and 'control' background sites. The sensors already installed in the Springfield, Chicopee, and Holyoke were based on a weighted site selection analysis performed by assigning varying importance levels to different factors such as traffic density, proximity to emission hotspots, and distribution of at-risk vulnerable populations. The monitoring locations represent a variety of urban, suburban, and rural or green space areas, including museums and libraries, schools or colleges, and residential homes (pvhealthyair.org). We will use a similar protocol, in collaboration with selected partners, to site the 30 additional AirU sensors in the three additional EJ communities.

Low-Cost Air Sensor Calibration and Maintenance: The quality of the low-cost air sensor data remains uncertain, and performance may be impacted by both the air pollutant mixture and concentration levels, as well as the environmental conditions (e.g., relative humidity, temperature, wind). MHAN will include 'field' low-cost air sensors installed at community sites as well as 'master' low-cost air sensors that will be placed for the duration of the proposed project at EPA monitoring stations (Springfield and Ware, MA) where reference PM_{2.5} and O₃ monitors are operated. One 'master' Purple Air and one 'master' AirU low-cost air sensor will be at each EPA monitoring station. A three-phase calibration protocol will be conducted for all low-cost air sensors included in MHAN (pre-deployment, in-field, and long-term) to develop calibration factors to improve data quality.

As part of the *pre-deployment* calibration, 'field' low-cost air sensors will be placed for a minimum of two weeks at an EPA monitoring station with 'master' low-cost air sensors. This pre-deployment calibration will serve to evaluate 'field' sensor operation and development of pre-deployment PM_{2.5} mass and O₃ calibration factors for each 'field' sensors. Unique calibration factors will be applied to each 'field' low-cost air sensor based on the relationship identified with parallel two-minute resolution measurements from the 'master' low-cost air sensor and the regulatory grade reference air monitors operated at the EPA monitoring stations.

Once 'field' sensors are installed at community sites, the operating status of these sensors will be continuously monitored in real-time through a Sensor Health Dashboard (See Data Acquisition and Management Section). We will conduct *in-field calibration*, continuously comparing the neighboring low-cost air sensors. Calibration models will be developed using past two week of collected measurements

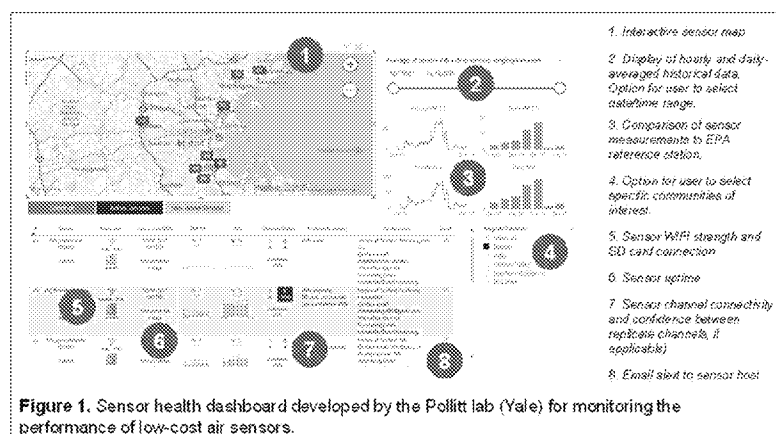
across the sensor network and applied calibration factors will be adjusted in real-time to the individual low-cost air sensors.

Due to low-cost air sensor drift over time and changes in the target environments, periodic *long-term* calibration is crucial to maintain consistency among distributed sensors and ensure data quality over periods of extended low-cost air sensor use. To rigorously evaluate measurement precision and bias, one third of 'field' low-cost air sensors will be collected annually and collocated at an EPA monitoring station together with regulatory grade reference air monitors and 'master' sensors for up to two weeks. Following this co-location, sensors will be returned to the community monitoring locations. Sensors with obvious seasonal drift are prioritized for calibration. The remaining sensor locations will be selected using the pollution contour map as guide. Sensors that monitor similar pollution levels and have similar land use characteristics will be grouped together. Within each group, the sensors will be further chosen based on the ease for low-cost air sensor collection. Following protocols like the pre-deployment calibration, updated calibration factors will be determined for each 'field' sensor.

Low-cost air sensor maintenance will be performed at a minimum annually and will include cleaning internal surfaces to prevent the buildup of insects or dust, replacing degraded sensing elements, and examining site features to ensure that no significant changes to the landscape have occurred.

Data Acquisition and

Management: Purple Air and AirU low-cost sensors will be connected to the internet through local WIFI networks at their installed locations. Data will be transferred in real-time to their respective company websites. Sensor data will be acquired through application programming interfaces (APIs) provided by each



sensor company, stored by the Yale team in a cloud-based centralized database platform. Acquired data will be accessed by our project team using a Sensor Health Dashboard (see **Figure 1**). This interactive dashboard was built by the Yale team will be used to monitor the low-cost air sensor connectivity (WiFi signal strength) and performance (data capture rate and quality). This dashboard will automatically alert the Yale team and community members hosting an air sensor if their sensor goes offline and is not reporting air quality levels to MHAN. The sensor health dashboard further includes a data processing tool that will be used to automate measurement cleaning and calibration. Cleaned and calibrated PM_{2.5} mass and O₃ concentrations will be shared on our publicly accessible MHAN website. All acquired data will be reviewed and downloaded to a local desktop computer by the Yale team for manual review.

Quality Control: The PurpleAir and AirU low-cost air sensors both use a Plantower PMS PM sensor to measure PM_{2.5} mass concentration. The AirU unit additionally contains a metal oxide sensor which will be calibrated as a proxy for ambient O₃ concentrations. Data reported by low-cost sensor channel(s) will be reviewed on a weekly basis to identify data quality issues. Sensor data will be flagged following review on the Sensor Health Dashboard for several quality criteria, including data completeness, departure from a typical range of values or daily variation, and correlation with nearby sensors. Temperature and relative humidity information will be evaluated only to determine if the readings display seasonal variation.

Manifest for Grant Application # GRANT13579879

Grant Application XML file (total 1):

1. GrantApplication.xml. (size 32146 bytes)

Forms Included in Zip File(total 6):

1. Form ProjectNarrativeAttachments_1_2-V1.2.pdf (size 16034 bytes)

2. Form SF424_3_0-V3.0.pdf (size 24301 bytes)

3. Form SF424A-V1.0.pdf (size 23274 bytes)

4. Form EPA4700_4_3_0-V3.0.pdf (size 22748 bytes)

5. Form OtherNarrativeAttachments_1_2-V1.2.pdf (size 16001 bytes)

6. Form EPA_KeyContacts_2_0-V2.0.pdf (size 37410 bytes)

Attachments Included in Zip File (total 13):

1. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1234-202203 - MHAN QA Statement.pdf application/pdf (size 660386 bytes)

2. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1245-IRS Letter of Determination (1).pdf application/pdf (size 417756 bytes)

3. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1244-202203 - PP Letter of Support - Yale.pdf application/pdf (size 660419 bytes)

4. ProjectNarrativeAttachments_1_2 ProjectNarrativeAttachments_1_2-Attachments-1246-20220324 - EPA-OAR-OAQPS-22-01 - HRiA Narrative.pdf application/pdf (size 380996 bytes)

5. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1237-202203 - PP Letter of Support - DEP LOC.pdf application/pdf (size 218073 bytes)

6. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1235-EPA FORM 4700-4 - HRiA Attachments EPA.pdf application/pdf (size 269504 bytes)

7. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1239-202203 - PP Letter of Support - MA DPH MAAP APCP LOC.pdf application/pdf (size 724245 bytes)

8. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1238-202203 - PP Letter of Support - Earthwatch.pdf application/pdf (size 79380 bytes)

9. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1241-202203 - PP Letter of Support - PHI-WM LOC.pdf application/pdf (size 725264 bytes)

10. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1240-202203 - PP Letter of Support - MAPC LOC.pdf application/pdf (size 354572 bytes)

11. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1243-202203 - PP Letter of Support - Tetrad LOS.pdf application/pdf (size 115153 bytes)

12. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1242-202203 - PP Letter of Support - RI DOH LOC.pdf application/pdf (size 751421 bytes)

13. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1236-202203 - MHAN Resumes.pdf application/pdf (size 827550 bytes)